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51ST CONGRESS, 2d Session. | HOUSE OF REPRESENTATIVES. | Ex. Doc. No. 287.

REPORT

ON THE

CLIMATE OF COLORADO AND UTAH,

WITH PARTICULAR REFERENCE TO QUESTIONS OF

IRRIGATION AND WATER STORAGE IN THE ARID REGION,

BY

General A. W. GREELY, Chief Signal Officer.

EXTRACT FROM A LETTER OF THE SECRETARY OF WAR ON IRRIGATION AND WATER STORAGE IN THE ARID REGIONS.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1891.

51ST CONGRESS, 2d Session. } HOUSE OF REPRESENTATIVES. { Ex. Doc. No. 287.

REPORT

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WITH PARTICULAR REFERENCE TO QUESTIONS OF

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BY

From the

CHIEF OF WEATHER BUREAU,

eral A. W. GREELY, Chief Signal Officer.

Washington, D. C.

A LETTER OF THE SECRETARY OF WAR ON IRRIGATION AND WATER STORAGE IN THE ARID REGIONS.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1891.

PREFATORY NOTE.

This report was prepared by the Chief Signal Officer prior to the transfer of the Weather Bureau from the War Department to the Department of Agriculture. In order to satisfy the great interest regarding the subject-matter which it covers, among residents of the region in question, the Secretary of Agriculture has ordered a considerable number of extra copies for distribution among them.

WAR DEPARTMENT,
Washington City, February 28, 1891.

The Secretary of War has the honor to transmit to the House of Representatives a report from the Chief Signal Officer, with text, tables, and charts, prepared in response to the resolution of the House of Representatives dated May 23, 1890, that—

> The Secretary of War be, and is hereby, requested to transmit to the House of Representatives the reports that have been prepared under the direction of the Chief Signal Officer of the Army upon the climate of Arizona and New Mexico and other parts of the arid region, together with such tables particularly of rainfall, temperature, evaporation, and other matters as relate thereto, with such corrections, alterations, and additions as may be deemed advisable by the Chief Signal Officer, who will also express his views as to the value and importance of said tables of temperature, precipitation, evaporation, etc., and their bearing upon the subject of irrigation and water storage.

The Chief Signal Officer expresses his opinion that the economic value of these reports is such as to justify their being printed by Congress for the information of the public.

REDFIELD PROCTOR,
Secretary of War.

The SPEAKER OF THE HOUSE OF REPRESENTATIVES,
Washington, D. C.

SIGNAL OFFICE, WAR DEPARTMENT,
Washington City, February 28, 1891.

SIR: Referring to the resolution of the House of Representatives of May 23, 1890, that "the Secretary of War be, and is hereby, requested to transmit to the House of Representatives the reports that have been prepared under the direction of the Chief Signal Officer of the Army upon the climate of Arizona and New Mexico and other parts of the arid region, together with such tables particularly of rainfall, temperature, evaporation, and other matters as relate thereto, with such corrections, alterations, and additions as may be deemed advisable by the Chief Signal Officer, who will also express his views as to the value and importance of said tables of temperature, precipitation, evaporation, etc., and their bearing upon the subject of irrigation and water storage," I have the honor to transmit herewith text, tables, and charts which illustrate Arizona, California, Colorado, New Mexico, Nevada, and Utah particularly with reference to temperature and rainfall, together with such other notes on the climatic conditions of the region as appear pertinent and important.

Owing to the multiplicity of duties which have lately surrounded the Chief Signal Officer this report has been delayed beyond the time at which he would have chosen to submit it. Even at the present time the Chief Signal Officer has been unable to give it all the personal attention he desired. In view of this fact he delegated to the officer in charge of the records division, First Lieut. W. A. Glassford, Signal Corps, certain portions of the region with which he was acquainted through residence and meteorological examination. Lieutenant Glassford's remarks appear as separate memoirs upon the climate of Arizona, New Mexico, California, and Nevada.

The Chief Signal Officer has treated the subject of the climate of the arid region in perhaps a drier and more practical manner, confining himself to a presentation of such facts and clear deductions as may be of greatest utility to investors and settlers, as well as of theoretical interest to the

more exacting student of irrigation problems. The resulting deductions clearly confirm the Chief Signal Officer's theoretical opinion that the arid regions can not be treated as a climatic unit with an entire disregard of physical boundaries, and that no general statement or treatment can be outlined which will be of equal applicability in every State and Territory within the region under discussion.

The Chief Signal Officer expresses his opinion that the climatic data presented herewith are of great value and importance to any corporation or community contemplating investments in works of irrigation or for water storage, and recommends that they be printed for the general information of the public.

Very respectfully,

A. W. GREELY,
Chief Signal Officer.

The SECRETARY OF WAR.

REPORT ON THE CLIMATOLOGY OF THE ARID REGIONS OF THE UNITED STATES, WITH REFERENCE TO IRRIGATION.

By Gen. A. W. GREELY,
Chief Signal Officer, U. S. Army.

The object of the resolution, in answer to which this report and accompanying charts and tables are submitted, calls for a consideration of this question from a standpoint indicated by the Chief Signal Officer three years since. In a previous report to the Senate (on the "Rainfall of the Pacific Slope," etc., Fiftieth Congress, first session, Senate Executive Document No. 91), in February, 1888, before Congress took legislative action regarding the arid regions of the United States, the Chief Signal Officer pointed out the magnitude of the irrigation question as affecting the future agricultural interests of the population over one-third of the area of the country, and also specifically expressed the opinion that this question could not be satisfactorily discussed and treated without an accurate knowledge of the rainfall over the area of each particular drainage basin.

In treating this subject exhaustively, a large volume could be prepared which would undoubtedly be of great value as a standard work of reference in connection with tentative enterprises for the development of the natural resources of the United States west of the one hundredth meridian, but in a report of this kind to Congress brevity is an essential feature, even if the limited time available for the preparation of the accompanying data did not, as it does, impose it upon the Chief Signal Officer.

In answering the resolution, the attention of the Chief Signal Officer has been directed to the States and Territories of Arizona, California, Colorado, Nevada, New Mexico, and Utah. The States and Territories enumerated comprise in their limits those sections of the United States over which the rainfall is the smallest, the prevailing temperatures the highest, the evaporation of moisture most decided, and the amount of sunlight the greatest; thus presenting, and in some localities combining, such maximum meteorological phases as are of an adverse character to the regular and successful prosecution not only of agricultural enterprises, but, indeed, to the development of any other industry wherewith an abundant supply of water is an essential factor, and for which in these regions the adventitious aid of irrigation is indispensable. The above-mentioned meteorological conditions are less marked and less unfavorable in the remainder of the arid regions, viz, northern California, Wyoming, Montana, the eastern parts of Oregon and Washington, and western portions of Nebraska, Kansas, Indian Territory, Texas, and the Dakotas.

It is a serious error and somewhat prevalent that one can predicate the necessity of irrigation by simply ascertaining and comparing the annual rainfalls of various localities. It needs no elaborate discussion to demonstrate not only the practical inutility of such comparisons, but also the certainty that deductions therefrom must be nearly always misleading and frequently detrimental.

To illustrate this point may be quoted the annual rainfall of Pittsburgh, Pa. (36.71 inches), and that of Julian, San Diego County, Cal. (37.68). As these rainfalls are almost identical in amount, it would naturally be assumed by one not conversant with the peculiar distribution of

meteorological conditions of the United States, which conditions depend almost as much on peculiar locality as on latitude, that any industry or pursuit in which rain is an important element would succeed as far as water is concerned equally well at either place. There could be no greater mistake, however, as the following data of average rainfall for Julian, Cal., and Pittsburgh, Pa., clearly indicate.

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.	Length of record.
	In.	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*Years.*
Julian	4.81	8.25	9.85	5.98	0.73	0.00	0.00	0.00	0.00	0.55	2.23	5.28	37.68	6
Pittsburgh	3.21	2.62	2.85	2.61	3.07	3.59	4.96	3.45	2.53	2.49	2.58	2.75	36.71	18

The rainfall at Pittsburgh is substantially uniform throughout the entire year; the greatest differences between the separate amounts for any two months being only 6 per cent. of the entire amount for the year. At Julian, however, during seven consecutive months, from the first of May to the last of November, only 9 per cent. of the annual amount falls, while nearly one-half (48 per cent.) of the entire precipitation of the year occurs during the months of February and March.

This leads up to the main point, evident to every farmer, that the most important characteristic of the rainfall, apart from quantity, is its proper distribution throughout the year. Over the greater part of the United States the rainfall of the winter months is not of such direct and vital importance to the agriculturists as are the rains of the late spring and of the early summer. This has been illustrated in a report of the Chief Signal Officer (see Senate Ex. Doc. 115, Fifty-first Congress, first session), wherein he has pointed out that the disadvantages of Nebraska, with a rainfall from one-half to one-third below that of the States of Maryland, New York, Pennsylvania, and the interior of Virginia, are neither as extensive nor as material as might seem evident to one casually considering the effect of the annual rainfall. In this respect the great advantage of Nebraska, and this advantage likewise obtains in parts of Kansas and South Dakota, is in the suitable distribution of rainfall throughout the year, particularly during the months of April, May, June, and July, which may be called, not inappropriately, the critical agricultural months from the standpoint of staple crops grown in Nebraska. Over this State as a whole, the percentage of rainfall in each of these four months closely agrees, that for April being about 11 per cent. of the entire annual rainfall; that for May, 17; for June, 16; and for July, 16 per cent.; in other words, substantially 60 per cent., or three-fifths of the rainfall for the year falls during the four months mentioned, the period when such rainfall is most needed for the growth and development of the staple crops.

Although the distribution of rainfall in certain portions of the Atlantic coast States is nearly uniform for the different months, and although the annual distribution on the Pacific coast is known to be peculiar and marked, yet there has been a popular tendency to ignore these widely varying rainfall characteristics and attribute the same climatic conditions to immense areas with widely differing physical features, and also at greatly varying distances from the ocean, the source of rain. Particularly has misapprehension existed as regards general scarcity of rain and its unequal distribution throughout the year, since the same rainfall conditions have often been attributed to the entire arid regions of the United States, which by general consensus of opinion cover the entire United States west of the one hundredth meridian.

Even among the better informed and casual observers of meteorological conditions, the tendency has been to concur substantially with this popular opinion, excepting so far as it relates to the coast region of northern California, Oregon, and Washington. While the belief of the casual observer as to the scarcity of water west of the one hundredth meridian may be considered true in a general sort of way, yet it is not so in many specific and important cases, for the latest rainfall maps of the United States compiled at the office of the Chief Signal Officer show that there are enormous areas of country in the so-called arid regions where the rainfall exceeds 15 inches (by which isohyetal, or line of equal rainfall, the arid region is, by some, limited), and even very large areas over which the annual precipitation exceeds 20 inches, and in lesser areas 25 inches.

The opinion also obtains among many that the rainfall of the arid regions is typically represented by the California rainfall, with a wet season from November to March, and a practically, if not totally, rainless season for the rest of the year. Such a typical curve may not be inappropriately represented by San Francisco, where the average rainfall is as follows: January, 5.10 inches; February, 3.60; March, 3.26; April, 1.93; May, 0.67; June, 0.15; July, 0.02; August, 0.02; September, 0.16; October, 0.98; November, 2.87; December, 5.32; year, 24.08 inches; length of record, 42 years. The data show that 43 per cent. of the annual precipitation occurs at San Francisco during the months of December and January, while only 2 per cent., or substantially no rain, falls between the 1st of June and the 1st of October.

This peculiar distribution of rainfall, however, is not characteristic of the entire arid region, and it obtains definitely only in California (with slight exceptions) and a portion of Nevada. In Oregon and Washington the autumnal rains begin gradually earlier, as one goes northward, commencing nearly a month earlier in Washington, where, however, they cease somewhat earlier in the spring.

These peculiarities as to the annual distribution of rain being so marked and varying, even on the bordering coast of the Pacific Ocean, strongly evidence the necessity of a most careful examination of the annual precipitation régime for the rest of the arid region, over which the rainfalls, as a rule, are less plentiful and more dependent on exceptional causes, and consequently more liable to extreme and unusual fluctuations.

This examination and comparison the Chief Signal Officer has personally attempted as far as the limited time at his disposal would permit, and the general distribution for different States is shown on Chart No. 1 where the typical rainfall curves are what may be called composite, being made up from selected stations, with long records, in the State or Territory to which the curve applies. The values here given are drawn from stations selected with reference to their geographical position as well as to their agreement with the common rainfall régime, and so may be considered as fairly representative of adjacent regions as well as of their immediate locality.

It will appear clearly from these curves, as is more evident by detailed examination of the original data for separate stations, that the varying periods of *wet** and *dry* or *very wet* and *very dry* months are almost as many in number as the States to which they obtain. These curves also make it apparent that, in order to insure in the arid regions economic and successful crops by irrigation, the growth of only such crops should be attempted or encouraged in different sections as are suited to the character of the local soil, the varying local seasonal temperatures, and which by their seasonal period of germination and development would have the advantage of the rainfall of those months in which the greater part of the general precipitation occurs. The advantage of this plan would be that it thus reduces to the minimum the quantity of water, absolutely essential to the success of the crops, which must be caught, impounded, preserved, and delivered on the ground at a considerable expenditure of labor and material.

The general distribution of rainfall throughout the year over the region west of the one hundredth meridian may briefly be defined as follows:

January.—This is a *very wet* month over all of California except the southeastern portion, where it is *wet.* In Oregon and Washington the coast region is *very wet* and the eastern parts of the States *wet.* It is also a *wet* month over Nevada and the greater part of Idaho. It is a *dry* month over western Texas and the western half of the Dakotas. It is *very dry* over the eastern half of the two Dakotas, the eastern parts of Nebraska, and over the greater part of Kansas. Over Montana, Wyoming, Colorado (except the eastern half, where it is *very dry*), New Mexico, and Arizona the amount of precipitation is either about the proportional amount with reference to annual rainfall, or deviates slightly therefrom.

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*NOTE.—The terms "wet" and "dry" with reference to months is something more than relative as used in this report. Here it is defined fully with reference to average rainfall, the same rule being followed as has been employed elsewhere. A *wet* month is one in which 50 per centum more rain falls than the average, and in like manner a *very wet* month is one in which double the usual amount of rain occurs, that is to say, 8.33 per cent. of the annual rainfall is the proportional amount for each month, so that under the definition here given a month with 12.5 of the average yearly rainfall is a *wet* month and one with 16.7 is a *very wet* month. In like manner a *dry* month is one in which the average rainfall does not exceed 4.2 per centum of the annual rainfall, and a *very dry* month is one in which 2.1 per centum, or less, of the annual amount occurs.

February.—This month is *wet* over Washington, Oregon, and California (except the southwestern part of the State, where it is *very wet*). It is *dry* over the Dakotas southward to western Texas; elsewhere the rainfall for February shows but slight deviations from its proportional amount with reference to the yearly range.

March.—A *wet* month for the western parts of Washington, Oregon, and California. A *dry* month over western Texas, the eastern part of New Mexico, Nebraska, the Dakotas, and Montana.

April.—A *dry* month in the southern half of Arizona and New Mexico with tendencies in localities to be *very dry*. A *wet* month in the interior valleys of southern California, over western Colorado and parts of eastern Utah, in South Dakota, and over considerable portions of the Indian Territory and northern Texas.

May.—A *dry* month over the western parts of Washington and Oregon, over all California, the western half of New Mexico, and the northern half of Arizona, and a *very dry* month in southern Arizona. A *wet* month over Texas (except in the neighborhood of El Paso) northward to include the Indian Territory, northeastern Colorado, Kansas, Nebraska, North and South Dakota, Wyoming, and the greater part of Montana. However, in northeastern Wyoming, western Nebraska, western Kansas, southeastern Colorado, and the western part of the Indian Territory the month is *very wet*.

June.—The month is *very dry* over California, southern Nevada, southern Utah, and Arizona, and is *dry* over western Colorado, northern Utah, central Nevada, and the western parts of Oregon and Washington. It is a *very wet* month over Montana, North and South Dakota, Nebraska, and Kansas. It is *wet* over Indian Territory, northwestern Texas, extreme eastern Colorado, and all of Wyoming except the extreme southwestern part, and over northern Idaho.

July.—A *very dry* month over California, Oregon, Washington, Idaho, and a *dry* month over northern Utah. A *very wet* month over the eastern parts of North and South Dakota, southwestern Nebraska, extreme western Kansas, eastern Colorado, western Texas, New Mexico, and the eastern part of Arizona. It is a *dry* month over western Arizona (except in the extreme southwestern part), southern Utah, northern Nebraska, and northern Montana.

August.—A *very dry* month over California (where it is practically rainless), Nevada, Oregon (where it is nearly rainless), Washington, and western Idaho. It is *dry* over eastern Idaho and extreme northwestern Montana. It is *very wet* over Arizona, New Mexico, and the mountain region of Colorado and southern Utah. It is *wet* over western Kansas, the panhandle of Texas, western Nebraska, and the eastern parts of North and South Dakota.

September.—*Very dry* and nearly rainless in California; *dry* over Nevada, southwestern Utah, Idaho, southern Oregon, and the greater part of Wyoming. It is a *wet* month over all of Texas (except the panhandle and southeastern part) and also in extreme southern Texas, along the coast where the month is *very wet*.

October.—The month is *dry* over western Arizona, southern California, southern Nevada, and in portions of the interior of southern Oregon and northern California. Elsewhere about the proportional amount of the annual rainfall occurs.

November.—A *wet* month in western parts of Oregon, Washington, and northern California. A *very dry* month over the panhandle of Texas, thence northward through western Kansas and western Nebraska, and the eastern parts of the two Dakotas; but elsewhere from the one hundredth meridian to the crest of the Rocky Mountains it is a *dry* month.

December.—A *dry* month over western Texas, western New Mexico, Kansas, eastern Colorado, Nebraska, North and South Dakota, with a tendency to be *very dry* in the extreme eastern portion of New Mexico, extreme southeastern Colorado, and extreme northwestern Kansas. The month is *very wet* over western Arizona, California, the greater part of Nevada, Oregon, and Washington.

It must be clearly understood that these terms, *wet*, *very wet*, *dry*, and *very dry*, refer not to the absolute quantity of rainfall over the regions mentioned, but to the average monthly quantities with reference to the proportional part of the annual rainfall, that is, if equitably distributed, 8.33 per cent. of the year's rain would fall in each month.

Attention is especially called to the fact that a paper of this kind must generally deal with averages, but in connection with the subject of irrigation it is of particular importance to briefly consider the question of excessive rainfalls and also of prolonged periods of drought.

In this connection it seems also important to consider the absolute humidity conditions over the arid region, that is, the actual quantity of aqueous vapor contained in each cubic foot of air at or near the surface of the earth.

On charts Nos. 2 and 3 are shown typical curves with reference to the absolute humidity of the air, which is expressed in the number of grains of water in each cubic foot of air. In preparing these charts it has been necessary to ignore State lines, as the distribution of moisture and damp air depends so very largely not only on the contiguity to the ocean, but also on the direction of the prevailing winds and the character of the intervening country over which the wind must pass from the source of water supply. Consequently these typical curves have been drawn for the Pacific coast region, the interior of California, and for Nevada, Utah, Colorado, New Mexico, and Arizona. The important bearing which the prevalence of moisture or dry air has upon growing vegetation is well known, but further than this it has an equally important bearing upon the methods of irrigation, since the drier the air the greater the quantity of stored or flowing water which will be evaporated thereby. As will be noted by reference to these charts, the greatest quantity of water is not found in the same month over all parts of the arid region.

In addition to the charts, it appears advisable to make some general statements as to the prevalence of moisture or dry air over the regions under consideration. It is impracticable to draw for general conclusions any hard and fast line as to what constitutes *very dry* or *very wet* air, as this question turns on the normal temperatures, which in turn depend materially on the latitude, the elevation, and the locality with reference to great bodies of water.

In general terms, however, it has been decided for present purposes to consider as *very dry* that air which contains during the colder half of the year—from October to March, inclusive—less than 1 grain of aqueous vapor to each cubic foot of air over Montana, Idaho, and the Dakotas, and less than 2 grains of aqueous vapor to each cubic foot of air over Arizona and New Mexico, with intermediate conditions for the intervening country. During the six warmer months of the year—April to September, inclusive—the limiting figures have been placed at 2 grains for the more northerly sections named and 3 grains for the more southerly. Under these limitations it appears that there is no *very dry* air over the arid regions during October, but that over the whole region west of the one hundredth meridian, except in California, Oregon, and Washington, along the coast region of the Pacific Ocean, the air gradually grows drier until January, when there is less than 1 grain of aqueous vapor to a cubic foot of air over the Dakotas, Wyoming, Kansas, Nebraska, and the greater part of Colorado; while less than a grain and a half per cubic foot is then to be found over northwestern Texas, the greater part of New Mexico, northern Arizona, Utah, Nevada, Idaho, and the western parts of Washington and Oregon.

These conditions of extreme dryness in the sections just mentioned remain substantially unchanged during February, but by the end of March the nearly normal conditions of October again prevail. Indeed, the spring months of March and April and the autumn months of September and October show for these regions about the normal conditions of the air as regards moisture, which conditions are, of course, always of greater dryness than in States of the same latitude east of the Mississippi River and along the west Gulf coast. During May and June the air is *very dry* over eastern California, New Mexico, Colorado, Arizona, Utah, and Nevada, over which regions a similar condition obtains during June, July, and August, except for southwestern Arizona, where the air becomes moderately moist. Exceedingly *dry* air during the summer and early autumn, with high mean temperatures of 70° and over, where there is less than 2 grains of water to each cubic foot of air, is found over southwestern Utah and eastern Nevada during June and September, and over central Nevada during July and August. In general it occurs that the air is moderately moist over the Dakotas, Wyoming, western Nebraska, western Kansas, and Colorado from June to August, inclusive, except during unusual meteorological conditions, fortunately rare and local, which occur during periods of deficient summer rainfall and prolonged drought, when the air becomes *exceedingly dry*. During such periods of extremely dry air it occurs, although infrequently, that atmospheric disturbances draw this *very dry* and highly heated air over extensive sections of country lying between the drought-stricken regions and adjacent centers of atmospheric disturbance.

No doubt exists in the mind of the Chief Signal Officer that a general introduction of irrigation and the consequent growth of vegetation over regions to the southwest of Kansas would very

largely ameliorate the unfortunate meteorological conditions which at times result in the destruction of crops in Kansas by extremely hot winds. The Chief Signal Officer has elsewhere pointed out that the very hot southerly and southwesterly winds experienced over Kansas and Missouri from September 12 to 15, 1882, were intimately connected with a drought, over southwestern Kansas and eastern Colorado, so prolonged that the surface of the country to the west and south of the wind-stricken districts was thoroughly parched and fiercely heated by the constant unclouded summer sun, whose action was facilitated by a continued absence of rain. It has also been pointed out that the frequency and intensity of similar visitations of very hot, dry winds have materially diminished on the Pacific coast since 1859. For 7 years prior to that year, when the interior valleys of California were substantially uncultivated, the number of hot days averaged 13 yearly; from 1859 to 1871 the average yearly number was reduced to 4. The opinion was expressed and reiterated that the immense quantity of land placed under irrigation in California, and the consequent vast increase in the area of vegetation, was an obvious reason why there should be a diminution in these destructive winds. As the regions from which the hot winds proceed have naturally a small rainfall, any steps for the general protection of adjacent countries must be gradual, and also involve a great outlay of labor and money.

Evaporation is a very important element in connection with irrigation. High temperatures and strong winds favor evaporation greatly, since at high temperatures not only will the air contain more aqueous vapor, but the water passes more quickly into the gaseous state, and the greater the quantity of air, whether "wet," "dry," or "very dry," which passes over the water surface, so much the greater the quantity of water lost by evaporation. If only 20 or 30 inches of water were lost annually evaporation would be a factor of minor importance, but over the arid region the water which would be evaporated if freely exposed would attain a depth ranging from 5 to 9, and possibly in some cases 15 feet annually. Under these circumstances it is essential to consider these phenomena.

The depth of water evaporated over free-water surfaces will be stated later, but it is advisable to call attention to Chart No. 4, which shows the variation in evaporation throughout the year. These curves are composite ones, made up from selected stations, and, therefore, fairly represent evaporation conditions over the States or sections to which they pertain. It is important to note that while evaporation is most rapid during the month of June in Arizona, Colorado, and New Mexico, yet in Utah and the interior valleys of California the greatest amount does not occur until the months of July and August. In Nevada the maximum evaporation takes place in August, while on the coast of California, curiously, it is delayed until the month of October.

As a general rule the climatic conditions of the arid regions are marked by the presence of small amounts of aqueous vapor in the atmosphere, relatively high summer temperatures, and the prevalence of quite strong winds, which three conditions greatly facilitate evaporation. There are but few satisfactory observations of evaporation in the arid regions, and the crudity with which most of these observations have been made is such as to render many of them of doubtful value.

Fortunately, investigations of this subject have been made by Prof. Thomas Russell, of the Signal Service, in which the final values, though obtained by somewhat empirical methods, are dependent in part upon careful observations of evaporometers made by skilled observers of the Signal Corps, and partly dependent, by theoretical connection, upon Signal Service meteorological observations of wind, temperature, and dew point for preceding years.

The figures obtained and the curves drawn by Professor Russell show the amount of possible evaporation from free-water surfaces under favorable conditions, and it is believed that they can be depended upon as fair approximation to the existing physical conditions. In any event these are the only data extant which can be applied to the extensive region under discussion, and so must be taken for what they are worth.

It is deemed proper to again state that these figures and curves do not represent the actual evaporation over the whole surface of the State, but only the possibilities of evaporation. It should be further understood that the actual amount of water taken up by the atmosphere depends upon the opportunity of evaporation, which in turn depends upon the relative amount of water surface, the wetness or dryness of the soil and its constituents, and upon the amount and character of vegetation covering the region under consideration.

It may be questioned by those who have not considered this subject in view of the observed facts, that these possible evaporations are far in excess of the actual amounts which could be

absorbed from a water area, say, of 100 square miles, but such would be an erroneous supposition as indicated by facts observed on an enormous scale. The most convincing and striking case is that of the Caspian Sea, with an area of about 180,000 square miles. As this is a closed sea of very large area, it is in fact the largest evaporometer in the world, where the silent but powerful operation of nature's forces in this direction are susceptible of direct observation and measurement. It appears from Woeikof (Climates of the Earth, p. 226) that the actual annual evaporation from the Caspian Sea is equal to 1.09 metres, or 43 inches of water. These figures have been determined from observed heights of the water surface of the Caspian Sea, in connection with the measured inflow of the Volga and other contributing rivers.

The great contrast between evaporation over extended water surfaces within the limits of the United States is illustrated by Professor Gilbert in his valuable and exhaustive monograph on Lake Bonneville, which came to hand just as this report was finished. Professor Gilbert gives the amount of evaporation over the surface of Lake Michigan as equal to a layer of water 22 inches deep, this result being derived from the report of Mr. D. Farrand Henry on the meteorology of the Laurentian lakes and the report of the Chief of Engineers for the year 1868, Washington, 1869, p. 980. Professor Gilbert estimates that 80 inches of water are yearly removed from the Great Salt Lake, an estimate closely agreeing with the evaporation values determined by Prof. Thomas Russell, Signal Service, for this region, since according to his calculation the evaporation at Salt Lake City, near the southeastern shore of Great Salt Lake, amounts annually to 74.4 inches in depth.

Professor Gilbert speaks of this locality as follows:

* * * As in other desert regions, precipitation here results only from cyclonic disturbance, either broad or local, is extremely irregular, and is often violent. Sooner or later the "cloud-burst" visits every tract, and when it comes the local drainage-way discharges in a few hours more water than is yielded to it by the ordinary precipitation of many years. The deluge scours out a channel which is far too deep and broad for ordinary needs and which centuries may not suffice to efface. The abundance of these trenches, in various stages of obliteration, but all manifestly unsuited to the everyday conditions of the country, has naturally led many to believe that an age of excessive rainfall has but just ceased—an opinion not rarely advanced by travelers in other arid regions. So far as may be judged from the size of the channels draining small catchment basins, the rare, brief, paroxysmal precipitation of the desert is at least equal while it lasts to the rainfall of the fertile plain. * * *

Experiments in Sydney, New South Wales, under the direction of Mr. H. C. Russell, government astronomer, shows that the amount of evaporation from day to day depends very materially upon the conditions of the soil. If it is wet on the surface evaporation proceeds much faster than over water, but as the ground dries the earth evaporates less than the water, and, what is a very important matter when considered with reference to large areas of the arid region of the United States, when the soil becomes dry and is packed hard, surface evaporation substantially ceases, even when the soil is damp enough below to keep vegetation growing.

These experiments in New South Wales show the very important factor which suitable vegetation will exercise in bringing subsoil water to the surface, and thus increasing evaporation during the dry portions of the year. The results of the experiments show that evaporation from grass soil is more regular than from bare soil, and in the course of the year it lost more than dry earth by 14 per cent. and also evaporated 9 per cent. greater than water surfaces.

Reeve's experiments at the London Water Works show evaporation from grass land to be 12 per cent. less than from water. In Sydney, during a year of deficient wind, in 1885, the water evaporated most, but in a wet and windy year the grass evaporated most.

It must be admitted, however, that careful and extended observations will be necessary before the definite relations of different classes of vegetation to evaporation have been determined with that accuracy which the importance of this question to the farmer demands.

In 1888 special observations upon evaporation were made at Lake George, New South Wales—a body of water with about 80 square miles of surface, at an altitude of 2,200 feet and surrounded by high land; the lake itself is shallow, especially at the margin. During 1888 the evaporation amounted to 47.72 inches, which in round numbers was twice the amount of the whole rainfall. In 1889 a valuable set of observations were made by means of a tank at Lake George, while the evaporation of the lake was also determined from day to day. In 1889 the evaporation of the lake was 44.29 inches, which gives an average of 46 inches for the 2 years.

Evaporation observations made from a pan in comparison with those from the Piché evaporometer at Sweetwater Dam, San Diego County, Cal., show that the Piché evaporometer indicates, if anything, less than the true value of evaporation from free water surfaces. This deficiency amounts to about 8 per cent., the Piché evaporometer indicating for the 7 months of the year 29.88 inches, the pan observations 32.33 inches.

In 1889 observations made from water in pans at Albuquerque, N. Mex., under the supervision of the U. S. Geological Survey, showed evaporations as follows, in inches: June, 9.6; July, 9.6; August, 9.3; September, 7.5; October, 4.1; a total in 5 months of 40.1 inches, which would probably amount for the whole year to about 80 inches, the evaporation as calculated by Professor Russell.

The average amount of water which could possibly evaporate yearly, expressed as depth of water in inches, and also in cubic miles of water, is as follows:

States.	Total amount.	Average depth of possible evaporation.	States.	Total amount.	Average depth of possible evaporation.
	Cubic miles.	*Inches.*		*Cubic miles.*	*Inches.*
California	170.9	67	New Mexico	146.2	78
Utah	90.9	68	Arizona	145.9	80
Colorado	108.6	69	Nevada	145.8	90

As is stated above, a layer of water to the depth of 67 inches could evaporate from the entire surface of California during a year of normal temperature, wind, moisture, and sunshine, but the difference in the amounts which could evaporate over different parts of the State are very great, increasing very rapidly inland, being about 37 inches along the immediate coast and rising to about 50 inches in the extreme northwestern part, 84 inches in the northern part, and over 100 inches in the southern part. In the very extreme northeastern part—in the Fort Bidwell region—evaporation, however, barely reaches 50 inches. Over fully one-third of California—the extreme eastern, and particularly the southeastern portions—the possible evaporation could reach, if free water surfaces continued throughout the year, the depth of 7 feet or more.

Over Utah the climatic conditions affecting evaporation are extremely constant in their combined operation, and probably of nine-tenths of the entire area the possible annual evaporation would neither exceed 75 inches nor be less than 70 inches.

Over Colorado the resulting conditions are likewise constant for the State as a whole, the possible evaporation ranging between 65 and 70 inches.

The conditions for evaporation in New Mexico are also very constant in action, and are quite accurately represented by the data from three stations, differing widely in geographical position, elevation, etc.—Fort Stanton with a possible value of 76 inches, Santa Fé, 80 inches, and El Paso, Tex. (separated from southern New Mexico only by the Rio Grande River), 80 inches.

In Arizona the climatic conditions are such as to produce widely varying results, the difference between the extremes being well represented by the annual possible evaporation of 55 to 65 inches at Prescott and Fort Apache, respectively, in the highlands of the Territory. Over the belt of country extending from Fort Grant west and northwest to the Colorado River, and embracing a large portion of the Gila River above the junction of the Salt, also over the Maricopa and Yuma Desert and the lower portion of the valley of the Colorado-Grande, the possible evaporation rises to or exceeds 100 inches yearly.

Nevada, as a whole, is a State over which the phenomena of evaporation obtain to the greatest extent. There is but little, if any, part of Nevada where the possible evaporation does not exceed 80 inches annually, and this increases gradually from the northeastern to the southwestern corner, attaining, over the whole southeastern part of the State, a depth of more than 90 inches, and in some localities over 100 inches, annually.

The extreme dryness of the air would doubtless be relieved by irrigation, and this increase of the absolute humidity in the atmosphere would be considerable, locally in cases where light winds occur or calms prevail, while in cases where steady winds occur the benefit of the increased humidity would naturally be enjoyed by the country to the leeward of the irrigated section.

The relation of the actual amount of aqueous vapor in the air to the average temperature is an important one, and such relation is shown by the composite curves of temperature and aqueous vapor for each State on charts Nos. 2 and 3.

As might be expected, the actual quantity of water in the air increases, as a rule, with increasing temperature, so that the amount present is from two to three times as much during the summer as during the winter months. A careful examination shows, however, that the increase in the quantity of aqueous vapor is not commensurate with the increase in temperature from the coldest to the warmest month, so that, although there is much more water in the air during the summer months than during the winter, yet the dryness of the summer months is very much greater, owing to the average humidity. It would naturally be expected that the greatest amount of water would occur during the month of the highest temperature, but this is not so; for while this is true in some States and localities it is not true in others. For instance, in Nevada, as a rule, the warmest month is July, while the largest amount of water in the air occurs during August, thus making the humidity conditions of August considerably more favorable than those of July. Along the Pacific coast the largest amount of aqueous vapor obtains during August, while the warmest month is that of September. In the interior of California, however, different conditions obtain, the maximum amount of aqueous vapor occurring in July while the highest temperature is during August; that is to say, reverse conditions obtain in the interior valleys of California during July and August to those in the adjacent State of Nevada. In Arizona, Colorado, and New Mexico the greatest amount of aqueous vapor coincides with the highest monthly temperature, and the disparity between the humidity conditions of winter and summer is less marked and trying to vegetation than in California, Nevada, and Utah.

The frequency and average daily amount of precipitation are very important climatic characteristics bearing directly on this question of irrigation. In certain localities the rainfalls are frequent and come in moderate showers; in other places infrequent, with moderate daily rainfalls, while in other places very dissimilar conditions to these obtain, of infrequent rain occurring in heavy showers or very infrequent rainfalls in small amounts. For instance, the average amount of precipitation on each rainy day is 0.25 inch of water at Milwaukee, with 134 rainy days in the year; at Rochester, 0.19 inch daily average, with 171 rainy days; at Pensacola, 0.19 inch, with 124 days in the year; at Poplar River, Montana, 0.12 inch, with 83 days.

The question as to how rain comes—whether slowly and steadily in quiet showers or violently in large amounts—is not only important from the general standpoint of irrigation, but also from the practical question of storage by reservoirs. In Arizona, for instance, from 30 to 40 per cent. of the entire precipitation occurs in heavy showers, where the rainfall is upwards of 0.75 inch during a day, of precipitation, and frequently more than an inch falls in a single shower. At Fort Grant 31 per cent. of the rainfall occurs in heavy showers; at Fort Apache, 29 per cent.; at Fort Thomas, 30 per cent.; at Fort Verde, 38 per cent.; at Prescott, 41 per cent. In New Mexico, at Fort Wingate, 30 per cent. of the rainfall occurs in heavy showers, and at Fort Stanton 24 per cent., while at Santa Fé only 18 per cent. thus occurs. At Salt Lake City 19 per cent. of the precipitation is in heavy rainfalls, while at Winnemucca, Nev., only 5 per cent. thus occurs.

It is also most important to consider at what season of the year the very heavy rainfalls come, and as to whether the water is in such quantities as to render it possible to reserve it by storage for use during the drier portions of the year. It is evident, for instance, that the value of waste water stored for irrigation depends very largely upon the season of the year in which it is caught, since in the arid regions, where evaporation is so extremely rapid and constant, water which is caught and stored immediately after the ripening and harvesting of the important crops must be held for many months, subject to enormous loss in various ways, while, on the other hand, rainfall caught just before or at the beginning of the agricultural year will furnish to the irrigated land a much larger percentage of the water originally stored.

Again, is the storage water to be gathered from gradual rains or from violent thunderstorms and cloud-bursts? In this latter connection extracts from the Monthly Weather Reviews of the Signal Service show what may be expected in the way of violent floods, and the possible damage resulting therefrom. These data may be said to cover only the past eleven years, as the data prior to the year 1879 have never been properly collated or examined.

LIST OF EXCESSIVE AND DESTRUCTIVE RAINFALLS OF LATE YEARS IN ARIZONA, CALIFORNIA, COLORADO, NEVADA, NEW MEXICO, AND UTAH.

ARIZONA.

December, 1879.—At Phœnix on the 29th an unusually heavy rainstorm caused the river to rise 10 feet in 2 days.

August, 1881.—Near Wickenburgh, Ariz., a cloud burst, causing the Hassayampa River from being perfectly dry at sunset, August 6, 1881, to be a stream a mile wide at 11 p. m., and from 2 to 15 feet deep; in 13 hours the river was again dry. On the 17th a flood interrupted communication and did much damage in the Salt River Valley near Phœnix.

August, 1882.—Serious washouts occurred on the 24th between Casa Grande and Yuma.

December, 1883.—The Hassayampa at Wickenburgh, which had been dry for several months, suddenly rose on the 22d beyond the fording stage, remained high over the 23d, and then fell rapidly.

March, 1884.—At Florence on the 7th a cloud-burst flooded the streets 4 feet deep. On the 10th several miles of track were washed away east of Yuma. On the 11th the Gila broke through its levees and flooded Yuma.

June, 1884.—At Yuma the Colorado was in flood on the 9th and seriously washed the railway west of the town. Yuma itself took no damage because levees had been reconstructed since the Gila flood of March.

July, 1884.—The flooded Colorado washed away parts of the railway bridge at Yuma on the 1st and 3d.

September, 1885.—A freshet occurred at Pantano on the 9th. The railroad track was covered to a depth of several feet and damaged.

August, 1886.—This was a month of floods at Yuma. On the 1st, light rain fell during the greater part of the day. Seventy-five miles west of Yuma the rain was heavy, causing a washout on the railway and delaying trains. On the 15th there was a thunderstorm measuring 1.57 inches, of which 0.80 fell in 20 minutes; the railway was washed out both east and west of Yuma, causing a complete suspension of traffic for several days. On the 27th, heavy rain in the mountains washed out the track east of Yuma and delayed trains.

July, 1887.—On the 7th a remarkably heavy rain fell at Nogales, flooding streets, destroying bridges, and washing away railway tracks. During the prevalence of a thunderstorm on the afternoon of the 8th, a cloud-burst occurred on the east fork of the White River in the mountains east of Fort Apache. A volume of water 3 feet deep came down the cañon, which subsided in two hours. On the afternoon of the 13th another heavy rain occurred at Nogales in connection with which there was reported a cloud-burst in the mountains southeast of Sonora. Railway traffic was stopped for nearly a month.

August, 1887.—During the month there were numerous freshets in the Santa Cruz and Rillito Rivers.

September, 1887.—Heavy freshets came down the Santa Cruz and Rillito on the 9th, destroying several miles of track and some bridges near Pantano. On the 12th, 5 miles of track and three bridges were washed away on the Sonora railroad. Near Dragoon a railway embankment 50 feet high was washed out for a distance of 8 miles.

October, 1888.—On the 18th in a violent downpour of rain there were extensive washouts along the railway between Yuma and Texas Hill.

December, 1889.—On the 5th the Verde and Salt Rivers rose very rapidly and at Fort McDowell the Verde overflowed its banks. On the 6th the Verde overflowed at Fort Verde.

February, 1890.—At Fort Verde the river reached its highest flood mark on the 21st and washed out irrigating ditches. A large area of the Gila Valley was flooded during the latter part of the month and irrigating canals were severely damaged. On the 22d a sudden flood on the Upper Hassayampa destroyed the Walnut Grove reservoir, with great losses of life and property.

August, 1890.—The Gila was impassable for 10 days at Eagle Pass and ditches were damaged.

October, 1890.—Heavy thunder showers at Yuma on the 4th destroyed bridges and washed out the railroad.

CALIFORNIA.

September, 1877.—On the 12th during a heavy thunderstorm, between Pilot Knob and Cactus, on the Colorado Desert, a waterspout burst, destroying 400 feet of railroad.

January, 1878.—Successive gales caused many high records of precipitation to be made during the month. On the 7th there fell 1.83 inches at Santa Cruz, followed by 1.46 inches on the 8th. At Sacramento, 3.91 inches fell on the 15th and 16th; at Red Bluff, 9.12 inches from the 14th to 16th; at Los Angeles, 2.14 inches on the same days. Both at Los Angeles and Red Bluff railroad bridges were washed away and much damage was done throughout the country. At San Buenaventura and Santa Barbara wharves were carried away. On the 22d, 1.34 inches fell at Sacramento in 6 hours, and at Red Bluff 2.98 inches on the 21st and 22d. On the 24th, 1.60 inches was recorded at San Francisco, and at Red Bluff, 1.81 inches. On the 25th, 2.30 inches fell at Santa Cruz and the San Lorenzo River rose 5 feet.

December, 1879.—The rainfall recorded for the 20th at Los Angeles was 4.19 inches, which so swelled the mountain streams as to cause severe floods and washouts and interrupt railway communication for 36 hours.

January, 1881.—The latter half of this month is crowded with flood records in California. On the 18th the Sacramento River was full of driftwood at Sacramento City; on the 29th the river rose rapidly and measured 12 feet above low-water mark at 1 p. m.; on the 30th it stood at 24.5 feet above; and on the 31st it reached 26 feet above. During the night the levee broke 2 miles below the city and laid all the farms and orchards under water; on the other side, both above and below Washington, the levees broke and flooded all the tule lands. On the 18th the highest

water in 12 years was measured at San Jacinto. San Francisco on the 29th was visited with the heaviest rain ever known, causing much damage in the city and suspending all railway and telegraphic communication along the coast. Several miles of track were washed away in Santa Cruz County and the towns of Napa, Watsonville, and Marysville were flooded. On the 30th Camp Capitola was washed out to sea by a sudden rise in Soquel Creek, and but four houses of the town were left standing; at Windsor, in Sonoma County, 13 inches of rain fell in 70 hours; at Placerville, 7.61 inches fell in 24 hours, and eight men were buried alive in a slide of the railway bank. At Red Bluff on the 31st the Sacramento reached the height of 24 feet above low-water mark, and all low-lands were flooded, tracks were washed away and railroad cuts filled by landslides.

February, 1881.—The Sacramento River on the 4th reached the highest mark ever recorded, 26.5 feet above low water, and the town of Washington was flooded to a depth of 6 feet.

February, 1884.—At San Buenaventura 9.60 inches of rain fell during a single storm, which produced a freshet in the Santa Clara River which destroyed bridges and caused landslides. The Santa Ana River in Los Angeles County was so much swollen that its water reached the sea for the first time in 8 years. On the 17th a dam burst on the Los Angeles River destroying 40 buildings and doing other damage. From Los Angeles to Mojave in one direction, and to San Gorgonio in the other, the railway was seriously impaired. On the 21st the town of Fall Brook in San Diego County was washed away.

March, 1884.—During the first week of the month heavy rains did considerable damage in southern California, washing away the railway bridge at Colton. This disaster was followed on the 10th of the month by a washout of 6 miles of track west of Daggett.

April, 1884.—Heavy rains on the 9th and 10th caused washouts at Newhall, Keene, and Mojave. On the 18th the breaking of one of the San Joaquin levees flooded Lathrop.

December, 1884.—The first rains of the winter caused floods in several parts of the State. At Chico a levee gave way on Butte Creek. At Linden the San Joaquin flooded the town 3 or 4 feet deep. In Calaveras and Tuolumne Counties the mountain streams were so flooded as to cause suspension of travel. In Merced the lands were flooded for miles.

November, 1885.—In the latter part of the month occurred heavy rains in the southern portion of the State. The San Fernando tunnel caved in, the bridge at El Cajon was carried away, and in general railroad property suffered serious damage. At San Luis Obispo the rainfall measured 10.04 inches for the single storm, and great damage was done to the bridges.

January, 1886.—On the 25th the levee at Fresno, which retained the overflow water of the arroyos, burst and flooded three-fourths of the town. The heavy rain of the 18th and 19th swelled the Los Angeles River so that it overflowed its banks and submerged a vast area of the city and county; every railway bridge on the river was damaged, tracks were washed out in several places, four lives were lost and hundreds were made homeless. The money loss was estimated at half a million dollars.

April, 1886.—On the 11th 1.97 inches of rain fell at Los Angeles, doing such damage to the railway as far as Fernando as to delay trains.

January, 1888.—The heavy rains of the 3d and 4th, 3.39 inches falling in 24 hours, caused numerous washouts on the railroads near Los Angeles, suspending communication.

October, 1888.—From the Los Angeles Daily Herald of October 20: "A cloud-burst of extraordinary violence is reported on the desert along the line of the Southern Pacific Railroad. The rain came down in a perfect torrent, on the night of the 18th, causing numerous though not very large washouts between Cactus and Salton, Cal. The water fell in almost a solid mass at times, over 2 inches being registered at one place inside of an hour."

March, 1889.—Heavy rains caused washouts on the railroads in southern California, and traffic was generally suspended on the 16th. The Los Angeles River ran bank high, damaging the levee and the bridges and flooding parts of the city.

August, 1889.—The heaviest thunder, wind, and rain storm ever known upon the desert visited Daggett on the 17th; cellars were flooded and several houses blown down.

October, 1889.—On the 12th a rainfall of 7.58 inches was measured at Encinitas between 10 in the evening and 6 the next morning, which caused considerable damage; the storage reservoir at Cottonwood Creek broke and a large body of water rushed down the valley and washed away the railroad bridge. On the 20th 3.16 inches of rain fell at Los Angeles in 8¼ hours and stopped the cable roads. On the 23d 1.87 inches fell and numerous washouts occurred on the railroads centering in that city; the Santa Monica line of the Southern Pacific suffering the severest damage from a cloud-burst in the Santa Monica Mountains, which also destroyed a considerable portion of the Los Angeles and Pacific Railroad.

December, 1889.—At Los Angeles the heavy rains previous to the 15th caused considerable damage to the railroads, and the train service of the Southern Pacific and Santa Fé systems was interrupted by washouts. The bridges on the California Southern Railroad between Santa Ana and Los Angeles were washed away on the 23d. At Los Angeles the heavy rains from the 22d to the 26th caused considerable damage; streets were badly washed and the railroad bridges were generally destroyed. The Los Angeles River changed its channel south of the city, flooding the country.

January, 1890.—On the 25th a portion of Los Angeles was flooded by a rise in the river, and washouts occurred on the railroads. On the 27th a small portion of Fresno was flooded and the canals in that region overflowed, laying large tracts of land under water.

February, 1890.—Considerable damage was sustained near Los Angeles by the river again changing its course just south of the city.

COLORADO.

May, 1878.—Heavy rains on the 19th upon the divide at the head of Cherry Creek, 52 miles south of Denver caused a flood which swept away seven bridges, laid the lower part of Denver under water, and damaged the railroads

July, 1880.—At Pueblo on the 13th the rains were very heavy and the creeks badly swollen. Immense damage was done in El Paso and surrounding counties; several bridges on the Denver and Rio Grande Railroad were carried away, and half a mile of track was washed out between Manitou and Colorado Springs. On the 23d three railway bridges and considerable track were destroyed at Colorado Springs.

August, 1880.—The heavy rain of the 21st caused many washouts on the South Park, the Kansas Pacific, and Denver and Rio Grande Railways.

July, 1881.—The remarkable rainfall of 1.10 inches in 20 minutes flooded Denver on the 31st.

August, 1881.—On the 8th a cloud-burst occurred at Central City, causing suddenly a stream of water from 4 to 6 feet deep in two streets. The extensive rains prior to the 20th did great damage in the central part of the State; washouts were numerous, and in some cases extended over 5 miles of track.

June, 1882.—At Denver, on the 10th, Dry Creek suddenly overflowed and destroyed many houses, and a similar flood was reported from Golden.

August, 1882.—At Black Hawk, in Gilpin County, a land-slide caused by heavy rains buried two houses and a large extent of track of the Colorado Central Railway. The Purgatoire River and the Cache la Poudre River overflowed. Serious washouts occurred on the Denver and Rio Grande Railway.

June, 1883.—Rapidly melting snow on the mountains caused floods in the South Platte tributaries, and two bridges were destroyed by the Cache la Poudre River at Fort Collins. West of the divide floods in the Grand and Blue Rivers destroyed nearly all the bridges in Summit and Garfield Counties.

May, 1884.—A sudden and destructive rise on the 29th in Frenchman Creek, near the Nebraska line, was conjectured to have been caused by a cloud-burst. Eleven men were drowned, and the flood subsided as rapidly as it had risen.

May, 1885.—A cloud-burst occurred on the 17th upon Horse Fly Mountain near Montrose. Culverts were destroyed and roads gravely damaged.

July, 1885.—The heaviest rain of the season fell at Fort Collins on the 9th, causing a washout on the railroad. On the 26th a cloud-burst on the divide, at the head of Cherry Creek, caused a sudden and disastrous inundation at Denver. During the evening of the 25th a cloud-burst occurred on the mountains above Templeton Gap and caused considerable destruction at Colorado Springs. The flood-waters when passing through the gap were 175 feet wide and 7 feet deep, thus showing a cross-section of about 1,000 square feet.

July, 1886.—A thunder storm on the evening of the 20th near West Las Animas swelled all the streams of that region. The overflowing Purgatoire destroyed many bridges, and on the Atchison, Topeka and Santa Fé Railway 15 miles of track were washed away.

August, 1886.—On the 1st a very severe rain accompanied with funnel-shaped clouds and hail set in over the valley of Monument Creek near Colorado Springs. A freshet at once began to rage, poured down the narrow valley, and did great damage in the town, while bridges were quite generally destroyed.

May, 1887.—Thunder storms on the 26th, 27th, and 28th caused washouts on the Atchison, Topeka and Santa Fe Railway both east and west of Las Animas.

July, 1887.—A cloud-burst occurred in Tucker Cañon, near Golden, on the afternoon of the 14th. A slight rain storm succeeded peals of thunder, and suddenly a wave nearly 20 feet high swept down the narrow cañon, which for weeks had been quite dry. Many persons narrowly escaped death and every trail was obliterated.

July, 1889.—On the 19th the Purgatoire at Trinidad, in Las Animas County, began to rise very rapidly and in 1 hour had overflowed its banks.

August, 1889.—On the evening of the 9th a rain storm visited Florence, and though it lasted but 2 hours was the severest on record. The Arkansas reached a point higher than ever before known; every bridge within 10 miles of the city was washed away. Three hundred yards of the Atchison, Topeka and Santa Fé Railway were washed out, and the Denver and Rio Grande track was in places almost obliterated. The same storm flooded Pueblo, and between that city and Salida the Denver and Rio Grande track was washed out in five places, each of considerable extent.

August, 1890.—On the 14th the heaviest hail and rain storm on record at that place visited Colorado Springs. The total amount of rain and melted hail was 3.18 inches, of which from 2.75 inches to 3 inches fell in 30 minutes. The great volume of water did considerable damage to railroad tracks and bridges and traffic was temporarily suspended.

NEVADA.

June, 1882.—On the 11th 500 feet of track west of the railroad station at Winnemucca were washed away by heavy rain.

June, 1884.—On the 10th a cloud-burst in the Humboldt Mountains flooded valleys near Rye Patch and badly damaged the Central Pacific track for 30 miles.

August, 1884.—A destructive flood occurred at Eureka on the 7th. The water came from Ruby Hill and entered Adam's Hill Cañon. When the stream reached the Williamsburg mine it was 30 feet wide and 7 feet deep. The Titus mine was filled with water and one man drowned.

December, 1889.—The Rio Virgen, in the southern part of Lincoln County, rose so high under the unprecedented rainfall, that it overflowed its banks in many places and changed its course, washing away everything in its path. Lake Tahoe is reported as having risen 12 inches.

August, 1890.—On the 11th two intensely black thunder clouds appeared at Palmetto over the crests of the surrounding mountains, one approaching from the north and the other from the east. A short distance from Palmetto these clouds seemed to join and rushed with extraordinary swiftness toward the town. The resultant cloud was riven with lightning, and the air became filled with a terrific roar above which the thunder was hardly audible. A column of water poured down, excavating a trench about 500 feet long, and, in places, 7 feet deep and 20 feet in width. Within 10 minutes the entire lower part of the Palmetto Valley was 2 to 3 inches under water, and the cañon leading to Fish Lake Valley was a torrent. The stage road was obliterated for 9 miles, although the rainfall extended but little beyond Palmetto.

The storm of the 7th at the same place was very similar to that of the 11th, except that the rain seemed to come from one cloud only. This cloud appeared to touch the ground and roll down the mountain side, and the rain covered a greater area.

NEW MEXICO.

September, 1880.—The rainfall of the 21st, measuring 2.80 inches, caused a flood at Silver City, which damaged buildings and drowned a boy.

August, 1881.—Three floods visited Silver City during the month, on the 7th, the 15th, and the 20th, of which the second did considerable damage.

October, 1881.—Great damage was done to the Atchison, Topeka and Santa Fé Railway on the 6th, and all traffic was suspended south of Las Vegas. In the Rio Grande and Galisteo valleys there were numerous heavy washouts, and in many places the road bed was covered with great heaps of sand.

August, 1883.—An apparent cloud-burst on the Turkey Mountains, and the flood consequent upon it, interrupted railway travel near Tipton.

August, 1884.—The Pecos River reached a high stage during the latter part of the month at Puerto de Luna. Much damage was done to the dams and irrigating ditches.

April, 1886.—Heavy rain on the 19th and 20th caused Santa Fé Creek to assume the proportions of a river. Telegraph communication was interrupted, railroad bridges were washed away, and several miles of track destroyed.

June, 1886.—High water in the Rio Grande, in the Valverde, completely overflowed the towns of Chamberino, Launcen, and Nombre de Dios, this on the 2d and 3d of the month. Between the 7th and 10th the freshet having moved downstream washed away houses and railway tracks, destroyed bridges, and submerged three towns in the Mesilla Valley.

September, 1886.—Between the 11th and 13th, heavy rains fell between Socorro and Albuquerque, washing away several miles of track, a bridge over the Salida was rendered insecure, and several houses were destroyed in Socorro and San Marcial.

July, 1887.—Heavy washouts occurred in the southwestern part of the Territory.

June, 1888.—A heavy rainfall on the 18th, on the Sierra Blanca, caused a sudden rise in the mountain water course near Fort Stanton.

UTAH.

August, 1876.—On the 31st at Chalk Creek, 5 miles from Coalville, a cloud-burst was reported, and a solid bank of water, between 3 and 4 feet high, came down the stream, destroying dams.

July, 1883.—During the afternoon of the 29th a destructive flood occurred in the Kanab Cañon, in the southern part of the Territory. All of the wheat in the upper settlements was washed away, and a number of cattle were drowned. Many wagons and agricultural implements were lost.

March, 1884.—At North Fork the Central Pacific trains were delayed for two days previous to the 7th, owing to an overflow of the Humboldt River. The water in Bear River was higher than has been known since 1873. The river rose 7 feet in 24 hours, washing out all the bridges. Two bridges on the Waldo River were also washed away.

May, 1884.—The rivers throughout the Territory were much swollen during the month and the lowlands in the southern part of Salt Lake City were flooded. At Ogden several dams were swept away. Numerous washouts occurred on the Union Pacific. The Denver and Rio Grande Railroad was flooded, stopping all trains. The water in Great Salt Lake reached a greater height than has been known for many years. At Nephi, in Juab County, the railroad bridge over the forks of Salt Creek was washed away on the 9th.

June, 1884.—The lowlands of Salt Lake City continued flooded during the month. Dispatch of trains was impracticable on the Denver and Rio Grande Railway for 3 weeks.

August, 1885.—A cloud-burst occurred on a ridge of mountains about 3½ miles northwest of Frisco at 9 p. m., on the 22d. The water is reported to have rushed down the sides of the mountain with such force that large bowlders were displaced.

July, 1887.—On the evening of the 10th a flood devastated Fillmore and the surrounding country. The greatest damage was done in the mountains east of the place. Three saw-mills and half a herd of sheep were swept away.

August, 1889.—The rainfall was reported unusually heavy at Salt Lake City and surrounding districts, causing washouts on the Union Pacific and Utah Central Railroads. A land-slide, caused by a cloud-burst, wrecked a freight train at Weber Cañon.

From the foregoing list it appears that the excessive and damaging rainfalls, according to their order of greatest frequency, occur in the respective States and Territories as follows: California (southern part), Colorado, Arizona, New Mexico, Utah, and Nevada.

These destructive rainfalls in Colorado occurred without exception during the summer season, the 17 cases on record being distributed as follows: July, 6; August, 5; May, 4; June, 2. In Nevada the excessive rains have been confined, with one exception, to the summer months, the records being, August, 3; June, 2; December, 1. Utah is marked by a similar inclination, the 8 cases being distributed as follows: August, 3; July, 2; June, 1; May, 1; while March is the only cold month marked by a heavy rainfall. In New Mexico, of the 12 cases none occurred during a winter month; the distribution was as follows: August, 5; September, 2; June, 2; July, 1; April, 1; October, 1. California, on the contrary, has only 1 case of damaging rainfall during the summer months, that of August, 1889, near Daggett, in the Yuma desert; the 19 other cases were distributed as follows: January, 5; December, 3; February, 3;* October, 3; March, 2; April, 2; November, 1; the tendency being entirely towards heavy rains during the rainy period. The southern part of California only has been here considered, and these cases are connected with the unusual extension of rain conditions to the southern half of the State. Arizona, while sharing the tendency to summer rainfalls to a great extent in common with Colorado, Nevada, Utah, and New Mexico, yet has occasional cases of severe winter rainfalls. Fifteen instances are divided as follows: August, 5; September, 2; October, 2; July, 1; making 10 cases in the late summer and early autumn, against 3 in December and 1 each in February† and March.

It appears, then, from the records that the excessive rainfalls from which, as has been shown elsewhere, is derived about one-third of the whole rainfall of the arid region, occur very largely during the months of July and August, at a period too late, as a rule, for the economical utilization of such rain as storage of water for the staple crops of that season. Occurring, as these heavy rains do, during the late summer or very early autumn, the water can be utilized on a very large scale only for such crops and productions as can be planted, cultivated, and grown during the autumn and winter season; since, as is shown by data already quoted, of the water stored and held over until the following spring, an enormously disproportionate amount of it must have passed into the air by the steady and inevitable process of evaporation.

More than special interest attaches to the variation in the amount of rainfall from year to year. For instance, in Colorado the greatest amount of rainfall in any year ranges, as a rule and according to locality, from 110 to 150 per cent. of the average annual amount, and the minimum yearly rainfall varies from about 30 to 80 per cent. of the normal. In Utah the maximum yearly rainfall, generally, varies from 130 to 180 per cent. of the normal, while the minimum ranges from 35 to 70 per cent. In New Mexico the maximum generally amounts to from 125 to 150 per cent., though occasionally, at such widely-scattered stations as Forts Union and Craig, and Albuquerque, double the amount of yearly rainfall has been known. The minimum in this Territory varies from 40 to 80 per cent. of the average. In Arizona the maximum amounts for any year are generally between 130 and 200 per cent., the greatest departures from the annual average being at Fort Mojave, 240, and Fort Verde, 250 per cent. of the usual amount. The minimum rainfall averages generally from 45 to 75 per cent., but in one notable instance, Maricopa (record of 10 years), the amount in 1882 was only 8 per cent. In Nevada the maximum generally averages from 130 to 190 per cent., but at Fort McDermit the maximum rainfall is 330 per cent. of the yearly normal. The minimum for the State ranges from 40 to 60 per cent., according to locality. In California the maximum varies from 150 to 200 per cent., and in occasional localities in the southern part of the State ranges from 240 to 300 per cent. The minimum yearly amounts vary from 25 to 60 per cent., but at one place in the Mojave desert, at Indio (record of 14 years), in 1886 only 6 per cent. of the normal rainfall occurred. In short, the amount of rainfall which may occur over the arid regions in different years varies enormously. In Colorado, New Mexico, and Utah, the amounts in the years of greatest rainfall may be from two and one-half to three and one-half times as great as in the years of the least rainfall; in Arizona, from three to four times as great; in Nevada, from three to five times as great, and in California from four to six times as great, with even greater variations in particular localities.

* The late damaging floods of February, 1891, only emphasize the tendency of destructive rains to occur almost entirely in California during the winter season.

† The very violent and damaging rains in southeastern Arizona in February of this year occurred only in that part of Arizona which has a rainfall régime in substantial accord with that of southern California.

The most important information pertinent to the question of irrigation is the annual rainfall for the regions affected. The following table shows the average annual precipitation in Arizona, California, Colorado, Nevada, New Mexico, and Utah:

Annual rainfall.

State.	Elevation.	Area in square miles.	Cubic miles of rainfall.	Average depth of rainfall in inches.
Arizona	Sea level to 3,000 feet	38,670	5.3	8.63
	3,000 to 5,000 feet	27,230	6.3	14.56
	5,000 feet and over	47,120	10.7	14.30
	Whole State	113,020	22.3	12.42
California	Sea level to 2,000 feet	82,290	27.9	21.64
	2,000 to 5,000 feet	53,530	18.2	21.66
	5,000 to 7,000 feet	17,334	7.5	27.56
	7,000 feet and over	6,246	2.7	27.75
	Whole State	159,400	56.3	22.56
Colorado	4,000 feet and less	8,773	1.5	11.15
	4,000 to 5,000 feet	18,031	3.2	11.78
	5,000 to 7,000 feet	31,314	6.1	12.74
	7,000 feet and over	45,885	9.2	13.12
	Whole State	104,500	20.0	12.61
Nevada	Less than 5,000 feet	39,759	5.0	7.98
	5,000 to 7,000 feet	57,654	10.7	11.85
	7,000 feet and over	14,590	2.9	12.92
	Whole State	112,000	18.6	10.64
New Mexico	4,000 feet and less	6,996	1.1	10.14
	4,000 to 5,000 feet	34,407	6.1	11.59
	5,000 to 7,000 feet	57,503	12.4	14.13
	7,000 feet and over	22,300	5.6	16.34
	Whole State	121,200	25.2	13.62
Utah	5,000 feet and less	28,615	4.0	9.00
	5,000 to 7,000 feet	35,444	6.5	11.59
	7,000 feet and over	20,441	3.2	6.97
	Whole State	84,500	13.7	10.32

These data indicate that irrigation enterprises in these States, for successful prosecution, demand the most careful and scientific study of climatic conditions, particularly of the amount and distribution of rainfall and the possible evaporation. When perfected, the storage reservoirs must be sufficiently extensive to tide over the temporary droughts, and sufficiently provided with waste-weirs to safely discharge extensive and torrential rainfalls; and must be protected by cover or otherwise against extensive evaporation, while the fall of the feeding canals must be such, and the water conducted therein must be sufficient in quantity, as to insure the speedy delivery of the water without great loss by leakage or evaporation.

Further examination of the detailed data will show that while for very large areas the amount of rainfall and its distribution is such as to insure a copious and quite constant precipitation available for purposes of irrigation, yet within 100 or 200 miles of this same area may be others where the rainfall is so irregular in its fall and distribution, and so deficient in its quantity, as to render most doubtful the economic success of irrigation enterprises. Likewise, contiguous to other climatic conditions favorable to irrigation, may be found rapid evaporation, the continued presence of very dry air, and also of quite high summer winds, all unfavorable to irrigation enterprises.

Not only has the average depth of rainfall in inches been calculated for each State, as a supplement to the charts herewith attached, but a similar calculation has been made as to the average depth of rainfall between different altitudes. While these results have a scientific interest

in showing clearly the increase of rainfall as a whole with elevation, yet they have a practical result in indicating to the investor the average gross amounts of water (that is, without loss by seepage, evaporation, or otherwise) in each State from which the irrigating supplies must be drawn. It is evident, for instance, that no more water can be available for land above 5,000 feet in Arizona, California, or elsewhere than actually falls above that level.

The amount of rainfall in cubic miles has been calculated for each State, and also between certain altitudes, the excellent map of the Geological Survey having been used for obtaining data whereby to calculate surface areas between different altitudes in the States named. From these combined data we learn, for instance, that in Utah 13.7 cubic miles of rainfall occur in average years; in Nevada, 18.6; in Colorado, 20; in Arizona, 22.3; in New Mexico, 25.2, and in California 56.3 cubic miles. It is not to be supposed, however, that this quantity of water, or even an approximate amount thereof, is available for irrigation in any particular year. A very large amount of water is lost through absorption by the earth, and a very large amount passes into the air by evaporation. Further, as has been pointed out elsewhere, the quantity of rainfall varies largely in different years, so that in Utah, for instance, the rainfall in one year may amount in the gross, to 6 or 7 cubic miles, while in another year it may reach 20 cubic miles. The amounts given, however, have an important practical bearing which will be readily comprehended by those having irrigation enterprises under consideration or in course of construction.

The elements of cloudiness and of sunshine bear both directly and indirectly on irrigation problems, the presence of sunshine being necessary in certain months of the year for the fruition of growing crops, and the presence of cloudiness also being essential, as during its presence evaporation proceeds in a much more modified degree. Chart No. 5 shows the sunshine and cloudiness—the percentage of sunshine being shown directly and the cloudiness being, of course, the complement of the percentage of sunshine. These curves are composite, being derived from observations of cloudiness at selected stations in the States and Territories referred to. It has been assumed—a reasonable assumption, in which no large error can obtain—that the complement of the cloudiness will be the sunshine.

It might naturally be assumed that the curve showing for each month the precipitation would, as rainfall is associated with cloudiness, follow in diametrically opposing phases the curve of prevailing sunshine. How far this is true it may be well to determine.

Taking the Pacific-coast region as a rule, the amount of sunshine bears a very close and direct relation to the absence of rainfall, the dryest months being those of July and August, and during the latter of these two months the maximum amount of possible sunshine occurs, except in lower interior California, where the greatest amount of sunshine comes—fortunately for the raisin districts—in September, which is even less marked by the presence of clouds than the very sunshiny months of July and August. In Arizona and New Mexico, however, where the percentage of precipitation is considerably larger in August than in any other month, it appears that the largest amount of unclouded sky obtains, not in that month, but in the month of July. However, the extremely sunshiny months of June and October are marked in New Mexico and eastern Arizona by a normal amount of monthly rainfall, the precipitation occurring in short, sharp showers. In Nevada the smallest percentage of rainfall occurs during July, during which period the amount of sunshine is somewhat less than for August or September.

Cloudiness is an important element, since the presence of clouds naturally results in screening the earth from excessive action of insolation, or, in other words, in diminishing the heat received by vegetation from the direct rays of the sun. It also, acting as a screen, prevents in part the radiation of heat from the earth into space, and thus materially tends to modify and reduce the diurnal range of temperature, so that growing vegetation is not subject to as great cold as would otherwise obtain during the night, nor, on the other hand, does it receive the full amount of solar heat by day. While the amount absorbed by a fully clouded sky is not accurately known, yet it must be so considerable as to form an important element in agriculture. On the other hand, the absence of clouds facilitates greatly the process of insolation by day and radiation by night, thus increasing the range of temperature to which vegetation must adjust itself daily. While the highest amount of insolation or the full heat of the direct rays of the sun—the amount for each

locality necessarily depending on the elevation, latitude, and mean temperature of the growing season for that locality—is absolutely essential to the complete fruition of many crops, yet the maximum amount of possible insolation in the arid region, when occurring during the summer period over very extensive areas of that region, proves destructive to most vegetation which is not watered by irrigating methods.

Representing the total cloudiness by 100 per cent. and absolutely clear sky by 0, it may be considered that those regions are practically cloudless over which the average amount of cloud is 20 per cent. or less, and that an excess of cloudiness obtains when the face of the sky is covered on the average 50 per cent. or more. On this basis it appears, as might be expected from what has been stated before regarding the distribution of rain throughout the year, that the different sections of the arid region had not an identical cloud régime, in other words, that the excess of cloudiness and the periods of complete sunshine do not occur over the whole arid region during the same months. An examination of the entire region west of the one hundredth meridian shows that cloudless days (an average of 20 per cent. or less) do not obtain over any part of this region during January, February, or March. In December the areas of cloudless regions are very limited, including only portions of extreme southeastern California and southwestern Arizona.

In April this area comprises within its limits the southern half of Arizona, the extreme southeastern part of California, and southwestern New Mexico.

During May and June the cloudless area of April is extended gradually to the north and southwest, so that in the latter month (June) the sky is practically cloudless over western New Mexico, Arizona, southwestern Utah, southwestern Nevada, and all of California except the extreme northern part and the immediate coast region of the latter State, say 20 miles inland.

During July, Utah, New Mexico, and Arizona, except a limited portion of the lower valley of the Colorado in the last-named Territory, are entirely removed from the cloudless belt, which now obtains over California, except the immediate coast region and western half of Nevada and southeastern Oregon.

During August this area is not changed, except that it includes the greater part of Idaho, all of northern Nevada, and extreme northwestern Utah. It may be stated that during July, August, and September, the period of nearly constant sunshine reaches its maximum over the interior valleys of California, during which time very large areas of clouds are comparatively rare.

In September the cloudless region includes California, except the immediate coast, southwestern Oregon and Nevada, as in the preceding months, and also extends southeastward so as to include southern Utah and all of Arizona, except the southeastern portion.

In October the only changes are the gradual movement southward and inland from the sea of the limiting lines in California and Nevada.

In November the area is diminished so that cloudless weather occurs only over southeastern California and the southwestern half of Arizona; which region is still further reduced during December and disappears, as before stated, in January.

Of course the climatic conditions of Colorado, Utah, northern Nevada, and the northern parts of Arizona and New Mexico are such as to preclude extensive and successful cultivation of crops during the autumn and winter months. The southern half of California and also the southern part of Arizona have, however, such conditions of temperature during the autumn and winter as are favorable to the planting and growth of crops during these seasons of the year; and fortunately, also, the heavy rains of California occur during the late autumn and early winter, which favorable condition extends to a much slighter degree over the southern part of Arizona.

It is not part of the province of the Weather Bureau to dwell upon the question of storage of water by reservoir, but it is believed that it is expected that the Chief Signal Officer should set forth clearly such physical factors of the question as pertain to meteorology and climatology. What has already been said shows, however, that over very extensive sections of the arid regions the heavy rains from which must be derived waste water for irrigating purposes come at such a period of the year as to render it necessary to keep the water stored for a long time before it can be generally used for irrigating purposes; that such storage occurs in countries and under conditions where evaporation proceeds rapidly and to a degree almost unequaled in any other part of the world; and also, that the violent rainfalls are in such quantities and cover such an area of country

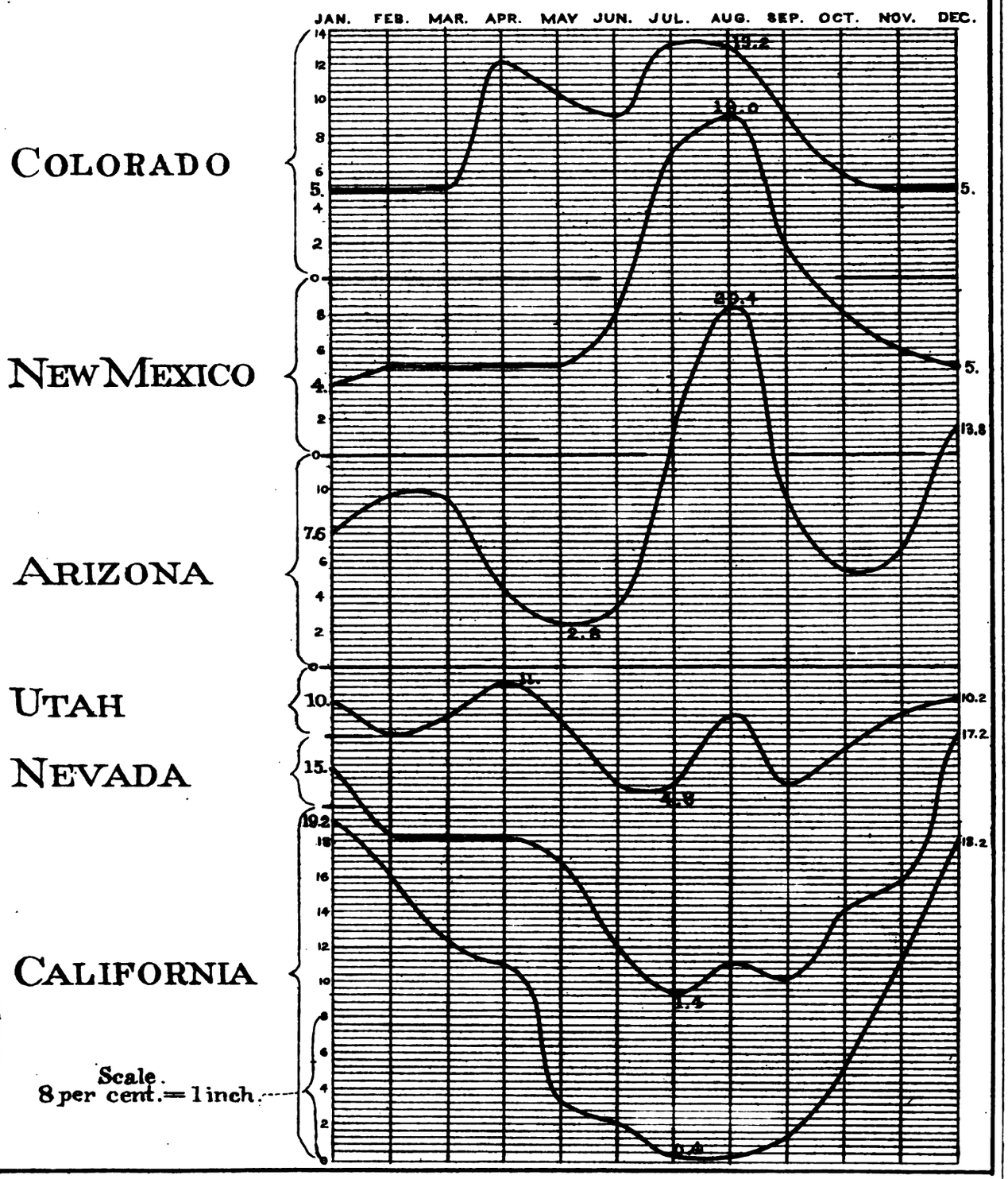
that the whole of these waters can not be stored; and that where storage facilities are provided they must be of most durable and solid construction, with such facilities for carrying off waste water as will render the recurrence of calamities similar to the great disaster on the Hassayampa River in Arizona practically impossible.

The Chief Signal Officer attaches to this report tables of precipitation and temperature which have been prepared under his personal direction, with reference to Arizona, California, New Mexico, Nevada, and Utah; together with certain charts intimately connected therewith. He further appends memoirs upon the climatic conditions with reference to irrigation, for Arizona, California, Nevada, and New Mexico, prepared by First Lieut. William A. Glassford, Signal Corps; which will further supplement the more general report of the Chief Signal Officer, and will further illustrate the tables and charts attached to the main report.

The effect of the wind in connection with evaporation has elsewhere been referred to. The velocity of the wind is also a factor not to be neglected in treating the question of storage of water for irrigating purposes. It furnishes an economical and effective motive power which has to some extent been utilized in the arid regions, but which in the coming years must prove to be a valuable agent in storing water, whether used in raising it, as possible, from the Missouri River to irrigate the plains of the Dakotas or in raising artesian water which has not sufficient head to bring it to the surface of the earth at the desired point. The average daily and hourly wind movement is given for five stations in Arizona in Appendix No. 10. The data for Phœnix are given as being the locality where the wind is perhaps the feeblest of any point in the arid regions. As a general rule it may be said that the average hourly velocity for the arid region diminishes from a maximum of 7 to 10 miles in the spring months to a minimum of 5 to 7 miles in the late summer and fall months.

CURVES TYPICAL OF THE NORMAL PRECIPITATION.

The values for the several Months are expressed as a percentage of the Annual Precipitation.

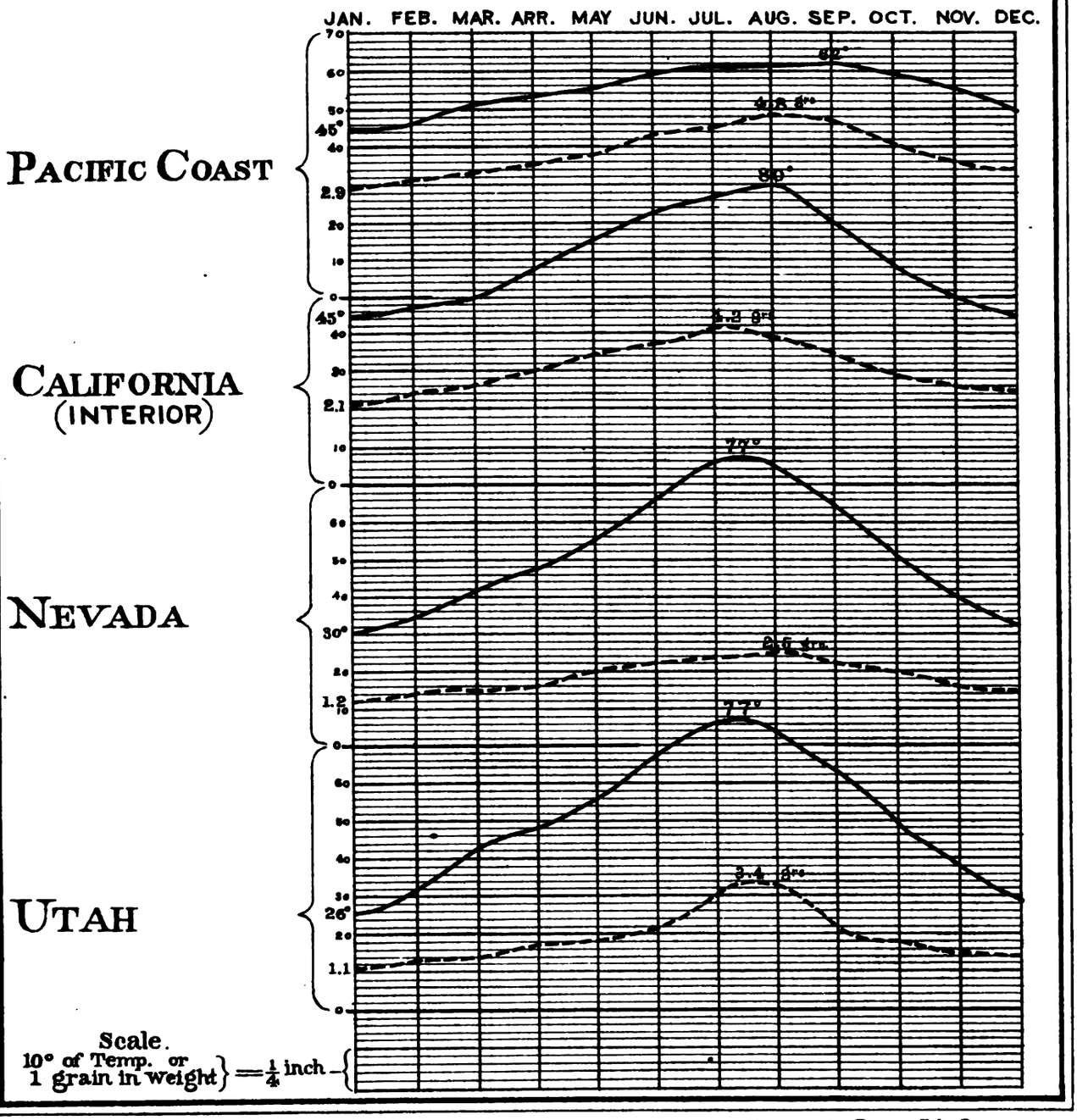


APPENDIX No. 2.

CURVES TYPICAL OF THE NORMAL TEMPERATURE AND WEIGHT OF AQUEOUS VAPOR.

——— Indicates Temperature in degrees F.

- - - - - - - - - - - - Indicates grains of Aqueous Vapor in each cubic foot of Air.


JAN. FEB. MAR. ARR. MAY JUN. JUL. AUG. SEP. OCT. NOV. DEC.
PACIFIC COAST
CALIFORNIA (INTERIOR)
NEVADA
UTAH
Scale. 10° of Temp. or 1 grain in weight = ¼ inch

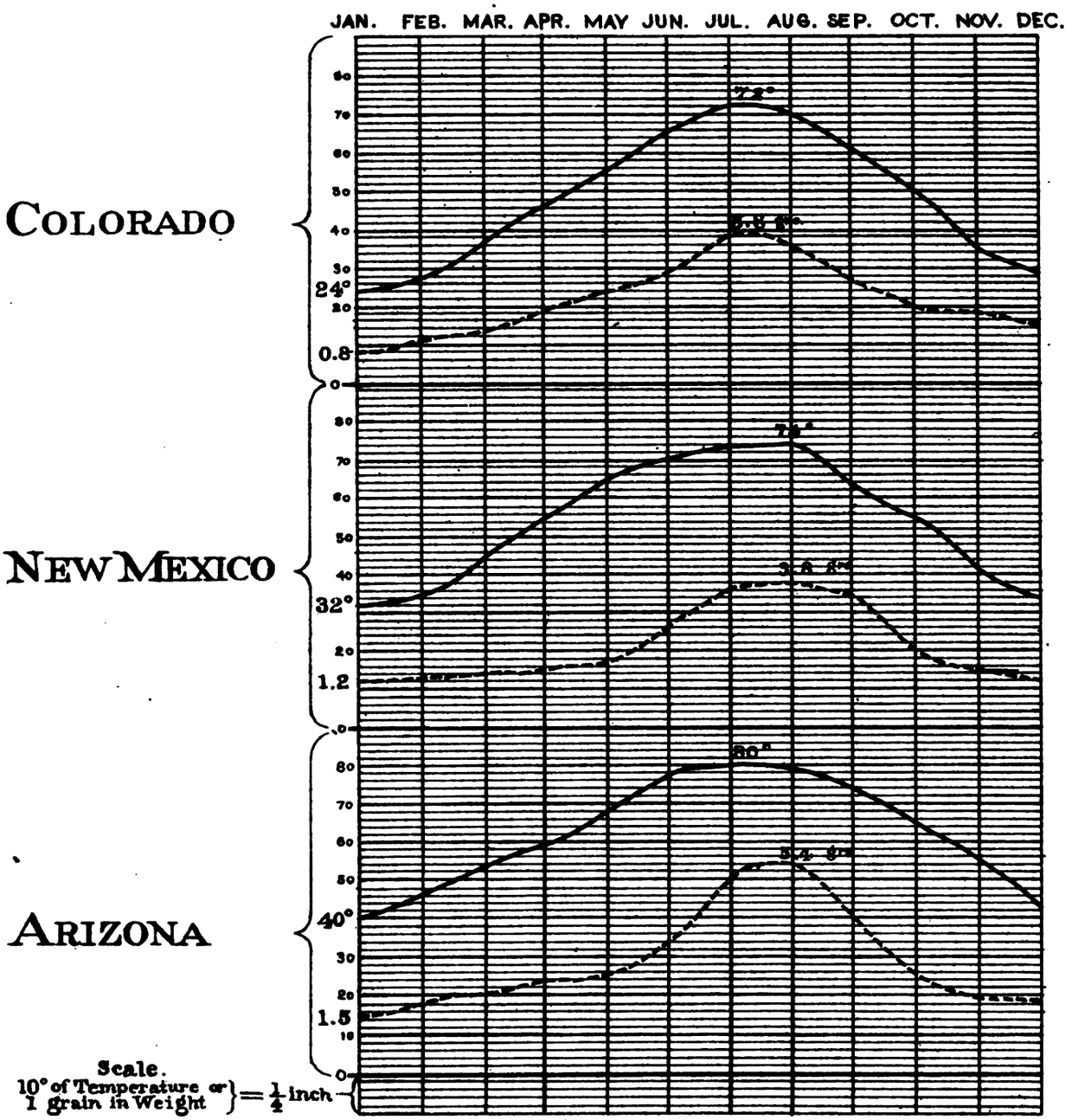
H Ex 287 51 2

APPENDIX No. 3.

CURVES TYPICAL OF THE NORMAL TEMPERATURE AND WEIGHT OF AQUEOUS VAPOR.

———— Indicates Temperature in degrees F.

- - - - - - - - - - - - Indicates grains of Aqueous Vapor in each cubic foot of Air.



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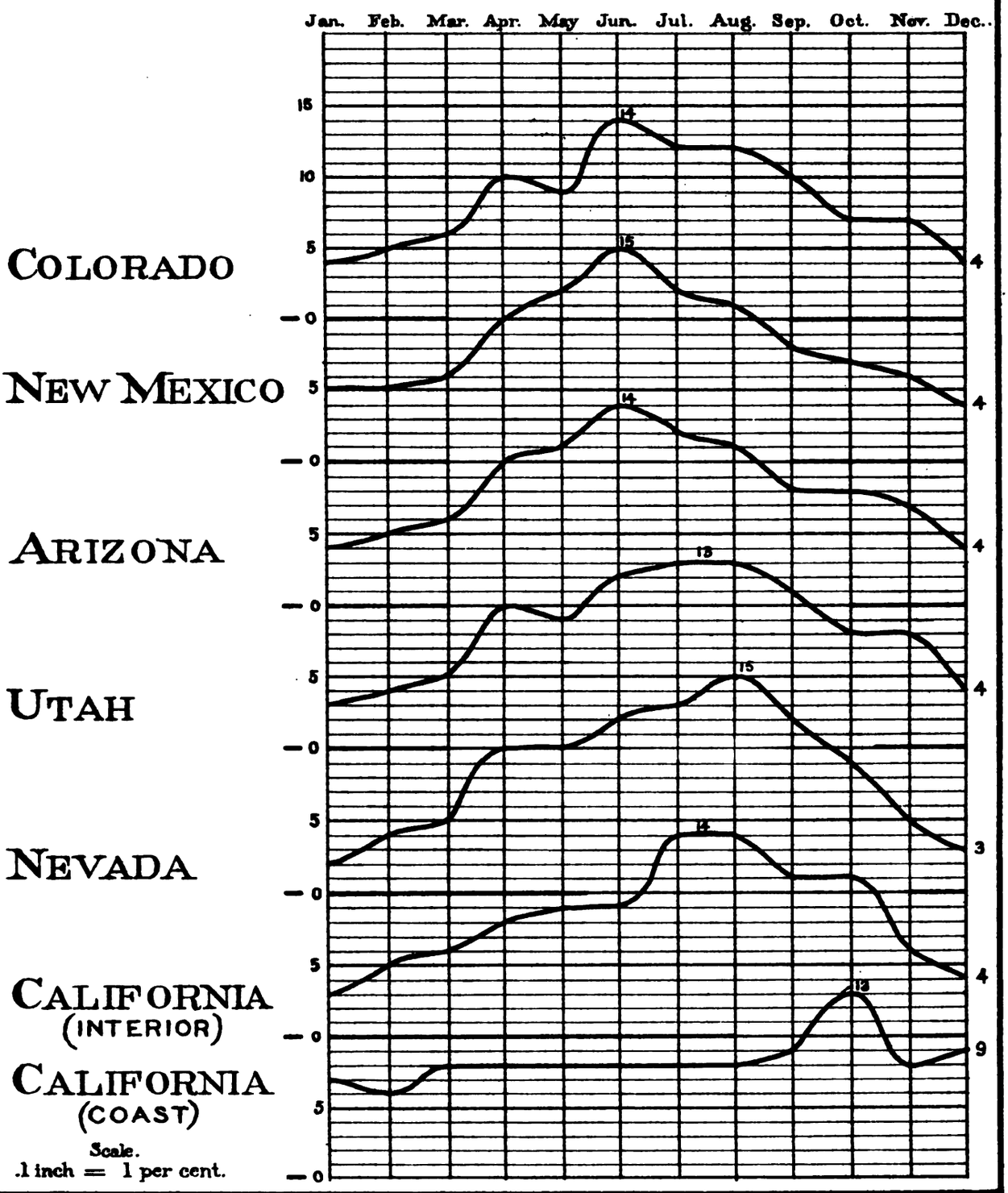
APPENDIX No. 4.

PERCENTAGE OF EVAPORATION.

The values for the several months are expressed as a percentage of the annual Evaporation.



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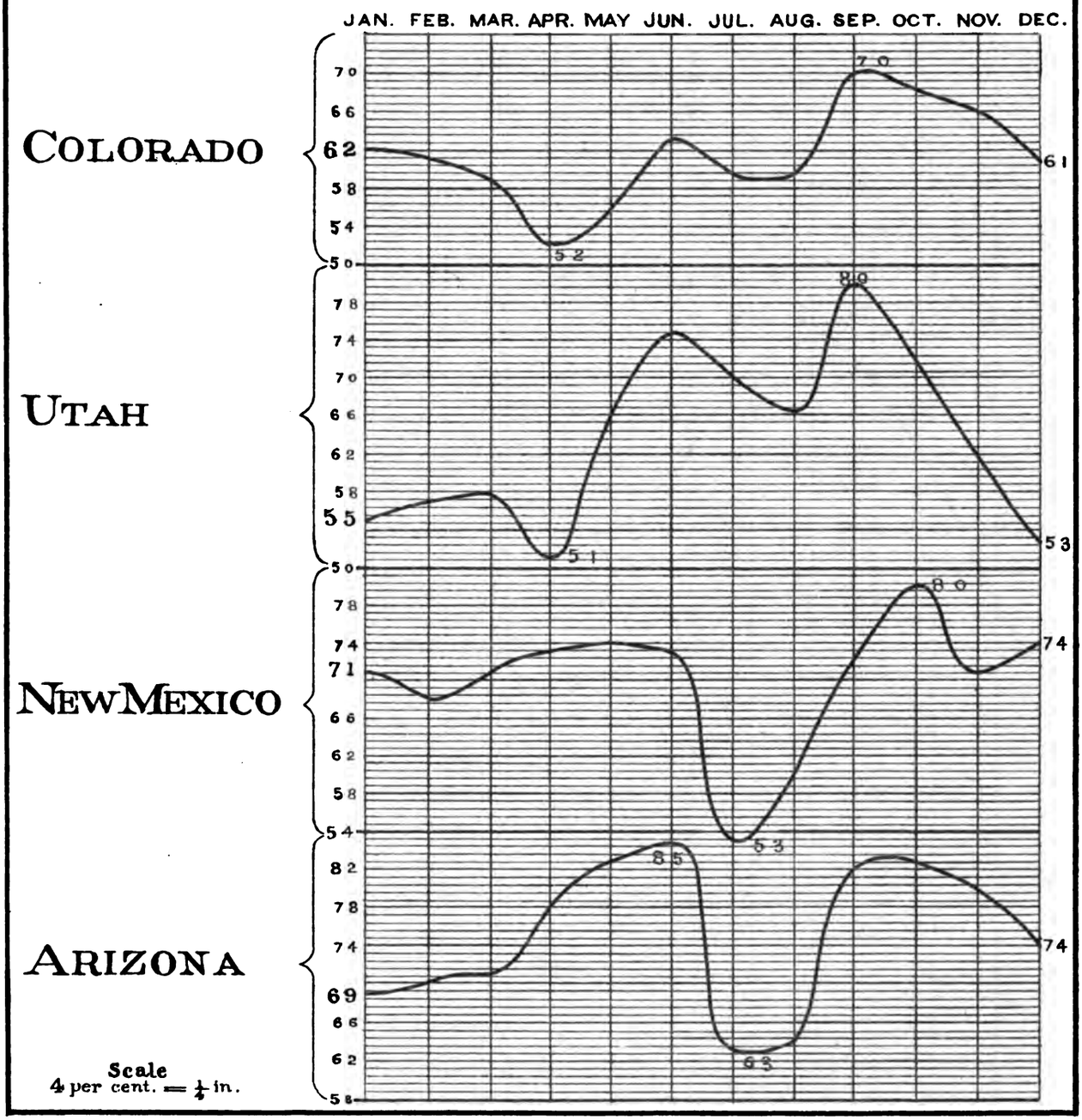
APPENDIX No. 5.

PERCENTAGE OF SUNSHINE.

100 Represents Continuous Sunshine.



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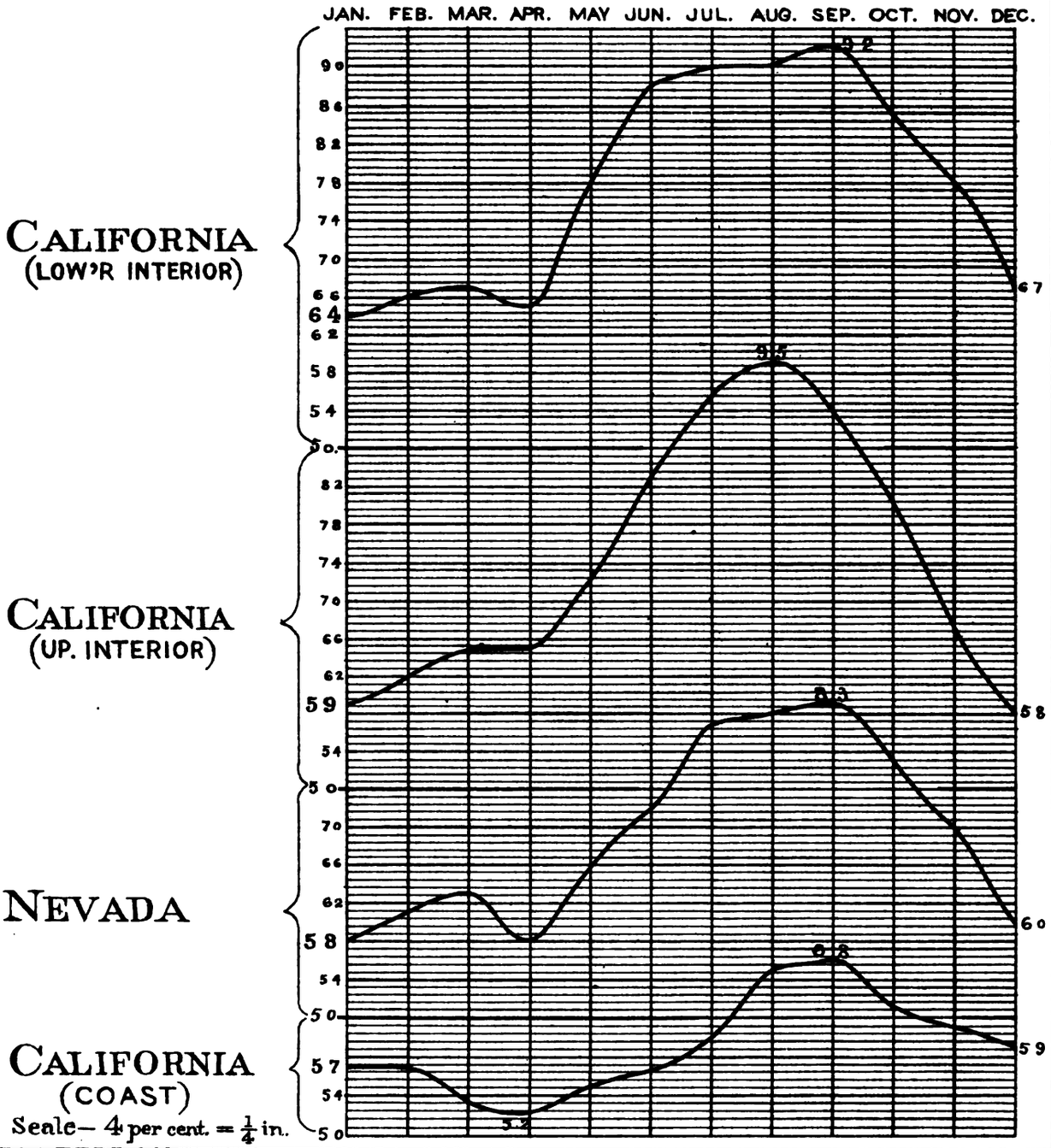
APPENDIX No. 6.

PERCENTAGE OF SUNSHINE.

100 Represents Continuous Sunshine.



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APPENDIX No. 45.

METEOROLOGICAL OBSERVATIONS MADE IN THE STATE OF COLORADO.

Class.	County and station.	Latitude.	Longitude.	Elevation above sea level.	Record.			T. or R. missing.	Authority.
					Length.	From—	To (inclusive)—		
	Larimer.	° ′	° ′	*Feet.*	*Yrs. Mo.*				
V. O.	Box Elder				0 7	Mar., 1890	Sept., 1890		L. A. Rawlings.
V. O.	Fort Collins	40 35	105 02	5,000	9 7*	Nov., 1872	....do		Prof. L. G. Carpenter and others.
V. O.	Elkhorn	40 45	105 28		0 10	Aug., 1889	....do	T.	R. C. Boyle.
V. O.	Livermore	40 48	105 14		0 9*	....do	Aug., 1890	T.	G. C. Burnham.
V. O.	Middle Box Elder	40 49	105 05		0 9	....do	May, 1890	T.	E. F. Kerr.
W. S.	Moraine	40 21	105 34		0 10*	Oct., 1889	Sept., 1890		M. M. Sprague.
V. O.	Upper Pine				0 11*	Aug., 1889	....do	T.	J. H. Halliday.
W. S.	Walden	39 30	107 09	8,050	1 5*	Aug., 1887	Feb., 1889		H. H. Richards.
	Weld.								
V. O.	Greeley	40 26	104 42	4,750	2 5*	Nov., 1887	Aug., 1890		D. W. Elliott.
W. S.	Hardin	40 25	104 30		1 0	Sept., 1889	....do	T.	E. B. Barnes.
W. S.	Platteville				0 11	Aug., 1888	June, 1889		
	Logan.								
V. O.	Crook				0 7	Mar., 1890	Sept., 1880		J. M. Boice.
V. O.	Le Roy (near)	40 34	102 56		0 6*	Oct., 1889	June, 1890		Chas. Green.
	Sedgwick.								
W. S.	Julesburg	40 59	102 15	3,475	2 0*	May, 1888	Sept., 1890		L. E. Loveland.
M. D.	Fort Sedgwick	41 00	102 27	3,660	3 2*	Apr., 1867	....do		U. S. post hospital and J. D. Lucas.
	Phillips.								
W. S.	Amherst	40 39	102 04		0 6*	Sept., 1889	Sept., 1890	T.	R. G. Taylor.
W. S.	Paoli	40 36	102 28		1 3*	Aug., 1888	Nov., 1889		L. W. Jones.
	Grand.								
V. O.	Fraser	39 57	105 49		1 0*	Apr., 1889	Apr., 1890		L. D. C. Gaskill.
V. O.	Hot Sulphur Springs	40 05	106 10	7,600	1 10	June, 1874	Mar., 1876		Wm. N. Byers.
	Boulder.								
W. S.	Boulder Cañon				0 8*	Oct., 1889	Aug., 1890	T.	G. E. Lake
W. S.	Longmont	40 10	105 06	5,000	3 9*	Sept., 1886	Sept., 1890		Dr. E. J. Clark.
	Morgan.								
W. S.	Brush	40 18	103 37		1 1	Aug., 1889	Sept., 1890	T.	Mrs. M. A. Leavett.
M. D.	Fort Morgan	40 18	103 42	4,500	2 4*	Dec., 1866	....do		U. S. post hospital and J. M. Lytle.
	Yuma.								
V. O.	Wray				0 7	Mar., 1890	Sept., 1890		J. W. Dilts.
V. O.	Yuma				0 7	....do	....do		Ira Edwards.
	Garfield.								
W. S.	Glenwood Springs	39 32	107 19	5,760	2 6*	May, 1886	Sept., 1890		J. C. Kennedy.
W. S.	Rifle Falls	39 35	107 50	5,418	1 6*	Jan., 1889	....do		W. L. Wilder.

Meteorological observations made in the State of Colorado—Continued.

Class.	County and station.	Latitude.	Longitude.	Elevation above sea level.	Record.			T. or R. missing.	Authority.
					Length.	From—	To (inclusive)—		
	Eagle.	° ′	° ′	*Feet.*	*Yrs. Mo.*				
V. O ..	Red Cliff				1 0*	Feb., 1888	Sept., 1890		H. W. Goodrich.
	Summit.								
W. S ..	Breckenridge	39 30	106 00	9,524	1 10*	Oct., 1888	....do		Dr. B. A. Arbogast.
V. O ..	Dillon				0 9*	June, 1888	....do		S. S. Pratt.
	Clear Creek.								
V. O ..	Georgetown	39 43	105 41	8,594	4 11*	Oct., 1878	....do		Dr. W. A. Jayne and others.
W. S ..	Idaho Springs	39 45	105 30	7,569	3 6*	Aug., 1886	June, 1890		F. D. Wiley.
	Jefferson.								
V. O ..	Golden City	39 44	105 20	5,993	4 11*	May, 1860	Sept., 1887		J. McDonald, M. S. Blount, E. L. Berthoud, G. W. Davies, and H. J. Fresch.
V. O ..	Hutchinson	39 32	105 16		1 0	Jan., 1875	Dec., 1875		J. C. Stanton.
	Arapahoe.								
V. O ..	Abbott				0 7	Mar., 1890	Sept., 1890		S. T. Shipman.
W. S ..	Bennett	39 46	104 26		1 10*	Feb., 1888	....do		Weather Service.
W. S ..	Byers	39 43	104 13		1 4*	Mar., 1889	....do		Pacific Rwy. system.
W. S ..	Deer Trail	39 38	104 01		1 3*	....do	....do		Do.
S. S...	Denver	39 45	105 00	5,281	20 10	Dec., 1869	....do		Signal Service, W. N. Byers and others.
M. D ..	Fort Logan				1 0	Jan., 1889	Dec., 1889		U. S. post hospital.
V. O ..	Kirk				0 8	Feb., 1890	Sept., 1890		G. M. Neikirk.
W. S ..	Watkins	39 46	104 34		1 2*	Mar., 1889	....do		Pacific Rwy. system.
	Mesa.								
V. O ..	Fruita	39 10	108 43		0 11*	Oct., 1889	Sept., 1890		Dr. T. H. Breen.
V. O ..	Grand Junction	39 05	108 25	4,500	1 5*	Apr., 1884	May, 1888		Frank McClintock.
W. S ..	T. S. Ranche	39 00	108 15		3 8	Feb., 1887	Sept., 1890		E. A. Rider.
	Pitkin.								
W. S ..	Aspen	39 12	106 50	8,000	2 9*	Oct., 1886	Mar., 1890		C. W. Thiele.
	Lake.								
W. S ..	Climax	39 25	106 05	11,325	3 3*	Jan., 1888	Sept., 1890		G. C. Wortman.
W. S ..	Leadville	39 15	106 17	10,200	2 4*	June, 1888	....do		J. C. Carroll.
	Park.								
W. S ..	Alma	39 18	106 04	10,320	3 9*	Apr., 1886	....do		C. A. Montrose.
V. O ..	Dudley	39 30	106 00	10,500	1 4*	Jan., 1877	May, 1878	R.	
W. S ..	Como (near)	39 18	105 53	9,500	5 9	Jan., 1885	Sept., 1890		A. Reichenecker.
W. S ..	Dolly Varden Mine	39 20	106 00		1 1*	Aug., 1888	Oct., 1889		C. L. Cass.
	Douglas.								
W. S ..	Castle Rock				0 10*	Apr., 1888	Sept., 1890		W. Holcomb.
	Elbert.								
W. S ..	River Bend	39 18	103 46		1 3*	Mar., 1889	Sept., 1890	R.	Pacific Rwy. system
W. S ..	Thon	39 0	104 33	5,795	2 6	Mar., 1888	....do		P. Blumer.
	Lincoln.								
W. S ..	Aroya	38 53	103 09		0 9*	Oct., 1889	Aug., 1890		W. L. Doyle.
W. S ..	Hugo	39 07	103 25	5,068	1 10*	June, 1886	Sept., 1890		Pacific Rwy. system.
	Kit Carson.								
V. O ..	Burlington				0 10*	June, 1888	June, 1889		

Meteorological observations made in the State of Colorado—Continued.

Class.	County and station.	Latitude.	Longitude.	Elevation above sea-level.	Record.			T. or R. missing.	Authority.
					Length.	From—	To (inclusive)—		
	Delta.	° ′	° ′	*Feet.*	*Yrs. Mo.*				
V. O ..	Delta	38 45	108 06	4,950	2 1	Sept., 1888	Sept., 1890	.....	Miss M. Zaninnetti.
	Gunnison.								
V. O ..	Gunnison	38 34	106 52	7,558	2 4	Jan., 1884	....do	.....	D. McCann.
	El Paso.								
W. S ..	Peyton	39 0	104 36	.....	1 9*	July, 1888	....do	T.	H. Y. Nichols.
S. S ..	Colorado Springs	38 51	104 47	6,032	12 4*	Dec., 1871	....do	.....	Signal Service, Prof. F. H. Loud, and others.
V. O ..	Fountain	38 40	103 40	5,420	2 6*	Nov., 1871	Feb., 1875	.....	C. J. Croft.
W. S ..	Husted	39 00	104 49	6,540	4 1	May, 1886	Sept., 1890	.....	E. P. Moon.
W. S ..	Palmer Lake	39 07	104 51	.....	1 8	Oct., 1887	May, 1890	.....	T. Gaddes.
S. S ..	Pike's Peak	38 50	105 02	14,134	14 11	Nov., 1873	Sept., 1888	.....	Signal Service.
W. S ..	Wigwam	38 32	104 36	.....	0 11*	June, 1888	Mar., 1890	T.	Jos. Irvine.
	Cheyenne.								
W. S ..	First View	38 49	102 30	.....	1 3*	Mar., 1889	Sept., 1890	.....	Pacific Rwy. system.
S. S ..	Kit Carson	38 43	102 47	4,289	3 5*	Aug., 1877	....do	.....	Signal Service, Pacific Rwy. system, and C. M. Morrison.
	Kiowa.								
V. O ..	Brandon	.....	.....	.....	0 7	Mar., 1890	Sept., 1890	.....	J. H. Weller.
V. O ..	Sheridan Lake	.....	.....	.....	0 7	....do	....do	.....	W. A. Rigor.
	Montrose.								
M. D ..	Fort Crawford	38 26	107 55	.....	1 9	Jan., 1889	....do	.....	U. S. post hospital.
S. S ..	Montrose	38 30	107 56	5,795	5 5	Feb., 1885	June, 1890	.....	Signal Service.
	Fremont.								
V. O ..	Cañon City	38 30	105 00	4,700	4 1*	Dec., 1869	Sept., 1890	T.	W. B. Felton.
	San Miguel.								
W. S ..	Pandora	38 03	107 40	8,700	1 9*	June, 1886	July, 1888	.....	
	Saguache.								
W. S ..	Saguache	38 05	106 15	7,740	2 9*	Sept., 1886	Oct., 1889	.....	J. W. Rambo.
W. S ..	Villa Grove	38 14	105 52	.....	1 2*	Apr., 1889	Sept., 1890	T.	L. T. Durbin.
	Custer.								
W. S ..	Westcliffe	38 07	105 26	7,800	2 1*	Apr., 1886	....do	.....	T. Charlton.
	Pueblo.								
V. O ..	Eagle Farm	38 07	104 35	.....	1 2*	Aug., 1889	....do	T.	A. W. Wing.
S. S ..	Pueblo*	38 18	104 36	4,753	9 9	Sept., 1872	....do	.....	Signal Service, E. S. Nettleton and Dr. F. H. Lay.
M. D ..	Fort Reynolds	38 15	104 12	4,300	4 0	May, 1868	Apr., 1872	.....	U. S. post hospital.
	Otero.								
V. O ..	Rocky Ford	38 00	103 40	4,100	2 0	Oct., 1888	Sept., 1890	.....	F. Watrous.
	Bent.								
S. S ..	Las Animas	38 04	103 12	3,899	7 10	Oct., 1881	....do	.....	Signal Service.
M. D ..	Fort Lyon	38 06	103 30	4,000	20 7*	June, 1862	Oct., 1889	.....	Signal Service and U. S. post hospital.
M. D ..	Fort Wise	.....	.....	.....	1 6	Dec., 1860	May, 1862	.....	U. S. post hospital.
	Prowers.								
W. S ..	Lamar	38 05	102 34	.....	1 9	Jan., 1889	Sept., 1890	.....	G. T. Herbert.

*Combined with South Pueblo.

Meteorological observations made in the State of Colorado—Continued.

Class.	County and station.	Latitude.	Longitude.	Elevation above sea level.	Record.			T. or R. missing.	Authority.
					Length.	From—	To (inclusive)—		
	San Juan.	° ′	° ′	*Feet.*	*Yrs. Mo.*				
V. O ..	Silverton	37 46	107 46	9,400	1 5	Sept., 1875	Feb., 1887	.....	A. N. Fuller.
	Rio Grande.								
W. S ..	Monte Vista	37 35	106 05	7,665	4 0*	Aug., 1886	Sept., 1890	.....	C. J. Aldrich.
V. O ..	Summit	37 28	106 35	11,300	3 7*	Aug., 1876	Oct., 1880	.....	Chas. E. Robins.
	Huerfano.								
M. D ..	Fort Massachusetts.	37 30	105 33	8,365	5 8*	Sept., 1852	Aug., 1858	.....	U. S. post hospital.
	La Plata.								
S. S ..	Durango	37 15	107 50	.....	1 11*	Aug., 1886	July, 1890	T.	T. J. Jackson.
V. O ..	Hermosa	37 24	107 50	6,700	7 0*	Apr., 1875	Aug., 1882	.....	A. N. Fuller.
M. D..	Fort Lewis	37 15	107 57	8,500	10 1*	Jan., 1880	Sept., 1890	.....	U. S. post hospital.
	Conejos.								
V. O ..	Platora	37 22	106 29	.....	0 8*	Aug., 1889	July, 1890	T.	C. W. Raymond.
	Costilla.								
M. D ..	Fort Garland	37 25	105 23	7,937	21 9*	Sept., 1858	Oct., 1883	.....	U. S. post hospital.
V. O ..	San Luis	37 14	105 24	.....	1 2*	Aug., 1889	Sept., 1890	.....	H. H. Griffin.
	Las Animas.								
W. S ..	Apishapa	37 26	104 33	6,167	1 1	Sept., 1889	....do	.....	Mrs. J. Rogers.
S. S ..	Trinidad	37 11	104 28	6,070	5 1*	Aug., 1877	May, 1888	.....	C. B. Park.
V. O ..	Watervale	.....	.....	.....	0 7	Mar., 1890	Sept., 1890	.....	M. D. Pierce.
V. O ..	Stanford	.....	.....	.....	0 8*	Jan., 1890	....do	.....	Geo. Poehill.
	Baca.								
W. S ..	Vilas	37 21	102 25	.....	0 10	Nov., 1889	Aug., 1890	T.	
W. S ..	Springfield	37 27	102 38	.....	1 7*	June, 1888	Sept., 1890	T.	G. W. Johnston.

Appendix No. 46.

MONTHLY AND ANNUAL PRECIPITATION AT STATIONS IN COLORADO.

Interpolated values are given in brackets[ ]. Capital T indicates a trace of precipitation. Letters of the alphabet set against the data for any month indicate the number of days missing from the record for that month—thus, "o" indicates three days missing.

ABBOTT, COLO.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1890	.....	.....	0.18	3.02	1.13	1.00	1.09	2.11	0.30	.....	.....	.....	.....

ALMA, COLO.

1886	.....	.....	.....	.....	.....	.....	.....	4.97	0.32	0.46	0.74	0.66	.....
1887	0.92	0.42	0.24	0.43	0.57	0.73	.....	.....	.....	.....	.....	.....	.....
1888	[0.35]	[0.40]	0.43	0.99	0.76	0.52	1.97	1.52	0.34	1.32	0.36	0.02	[8.98]
1889	0.33	0.19	0.08	1.02	2.35	0.76	1.53	3.45	0.48	0.53	[1.30]	[0.70]	[12.72]
1890	.....	.....	3.18	4.35	0.12	0.07	.....	2.29	1.04	.....	.....	.....	.....
Means	0.53	0.34	0.98	1.70	0.95	0.52	1.75	3.06	0.54	0.77	0.80	0.46	12.40

AMHERST, COLO.

1889	.....	.....	.....	.....	.....	.....	.....	.....	0.33	.....	0.00	.....	.....
1890	.....	.....	.....	.....	.....	3.41	2.01	1.01	0.00	.....	.....	.....	.....
Means	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

APISHAPA, COLO.

1889	.....	.....	.....	.....	.....	.....	.....	.....	1.03	1.70	2.75	0.20	.....
1890	0.20	0.20	0.85	0.74	0.13	0.11	0.26	1.72	0.04	.....	.....	.....	.....
Means	0.20	0.20	0.85	0.74	0.13	0.11	0.26	1.72	0.54	1.70	2.75	0.20	9.40

AROYA, COLO.

1889	.....	.....	.....	.....	.....	.....	.....	.....	[0.30]	0.25	0.50	0.00	.....
1890	0.08	[0.05]	[0.10]	2.25	1.44	0.43	1.53	1.01	.....	.....	.....	.....	.....
Means	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	[7.94]

ASPEN, COLO.

1888	.....	.....	.....	.....	3.42	1.10	2.24	2.88	0.07	1.76	1.59	0.41	.....
1889	0.45	1.01	0.54	0.55	.....	.....	.....	.....	.....	0.86	.....	2.69	.....
1890	1.90	4.40	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Means	1.18	2.70	0.54	0.55	3.42	1.10	2.24	2.88	0.07	1.31	1.59	1.55	19.13

Monthly and annual precipitation at stations in Colorado—Continued.

BENNETT, COLO.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1889	.....	0.40	1.00	5.85	5.05	1.80	.....	.....	.....	[2.50]	[0.40]	0.15	.....
1890	0.70	0.62	0.05	4.00	1.75	.....	0.85	2.02	0.20	.....	.....	.....	.....
Means	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	[15.04]

BOULDER CAÑON, COLO.

1889	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.85	0.45	0.04	.....
1890	.....	0.48	.....	3.20	.....	0.20	3.83	4.25	.....	.....	.....	.....	.....
Means	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

BOX ELDER, COLO.

1890	.....	.....	0.35	2.08	0.73	0.89	2.51	2.25	0.00	.....	.....	.....	.....

BRANDON, COLO.

1890	.....	.....	T	2.03	0.33	0.66	1.34	0.85	0.00	.....	.....	.....	.....

BRECKENRIDGE, COLO.

1889	0.60	[0.50]	0.70	4.50	5.89	1.47	1.45	0.66	2.00	0.95	4.70	2.25	[25.67]
1890	1.05	1.40	6.45	2.15	.....	0.25	1.76	1.76	2.12	.....	.....	.....	.....
Means	0.82	0.95	3.58	3.38	5.89	0.86	1.60	1.21	2.06	0.95	4.70	2.25	28.25

BRUSH, COLO.

1889	.....	.....	.....	.....	.....	.....	.....	1.08	.....	2.12	0.78	0.12	.....
1890	0.30	0.57	T	2.38	0.37	0.03	1.33	0.99	0.01	.....	.....	.....	.....
Means	0.30	0.57	T	2.38	0.37	0.03	1.33	1.04	0.01	2.12	0.78	0.12	9.05

BURLINGTON, COLO.

1888	.....	.....	.....	.....	.....	1.27	0.81	4.36	0.10	0.56	[0.25]	[0.05]	.....
1889	0.54	0.41	1.80	3.38	[2.00]	2.23	.....	.....	.....	.....	.....	.....	.....
Means	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	16.01

BYERS, COLO.

1889	.....	.....	.....	1.51	.....	.....	.....	.....	.....	0.74	0.78	.....	.....
1890	0.35	0.15	0.02	.....	.....	.....	1.10	0.95	0.25	.....	.....	.....	.....
Means	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Monthly and annual precipitation at stations in Colorado—Continued.

CAÑON CITY, COLO.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1869	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.10	.....
1888	1.87	0.30	0.67	1.61	1.16	0.00	1.36	2.38	T	0.62	0.74	0.00	10.71
1889	0.29	1.74	0.20	1.92	1.33	0.67	1.07	2.09	1.01	1.18	0.78	0.25	12.53
1890	0.46	0.20	0.45	4.16	0.80	.....	1.20	0.94	T	.....	.....	.....	.....
Means	0.87	0.75	0.44	2.56	1.10	0.34	1.21	1.80	0.34	0.90	0.76	0.45	11.52

CASTLE ROCK, COLO.

1888	.....	.....	.....	2.40	.....	.....	.....	.....	.....	.....	.....	0.15	.....
1889	0.42	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1890	.....	.....	0.70	1.41	1.51	0.10	2.26	2.69	0.05	.....	.....	.....	.....
Means	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

CLIMAX, COLO.

1888	.....	.....	.....	1.05	1.91	0.98	1.55	2.36	0.50	1.21	1.00	0.76	.....
1889	0.73	0.94	0.71	2.13	4.21	1.43	1.48	1.63	1.26	1.56	3.15	0.98	20.21
1890	1.03	2.51	6.10	3.50	2.35	0.68	3.57	2.45	2.32	.....	.....	.....	.....
Means	0.88	1.72	3.40	2.23	2.82	1.03	2.20	2.15	1.36	1.38	2.08	0.87	22.12

COLLINS, FORT, COLO.

1872	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.02	0.20	.....
1873	0.25	0.16	[0.60]	1.20	2.30	1.50	1.30	0.85	0.75	0.42	0.20	0.17	[9.70]
1874	0.06	0.43	1.20	0.77	2.95	0.65	3.15	0.25	[1.10]	1.00	0.02	0.00	[11.58]
1879	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.75	0.15	0.60	.....
1880	1.27	0.40	0.38	0.94	0.60	0.85	1.80	0.37	1.47	2.07	[1.10]	0.10	[11.36]
1881	1.10	0.55	1.45	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1882	.....	.....	0.17	.....	4.67	3.07	1.76	0.80	2.51	0.82	0.29	.....	.....
1883	1.00	1.50	0.68	.....	.....	3.18	.....	1.78	1.00	1.29	T	1.33	.....
1884	1.10	0.70	1.15	3.94	4.84	.....	.....	.....	.....	0.10	1.80	0.35	.....
1885	1.77	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1886	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.69	1.18	0.33	.....
1887	0.86	0.23	0.45	1.10	1.23	1.96	3.05	2.12	0.54	0.43	0.15	0.00	12.12
1888	0.29	0.36	0.73	1.23	3.39	0.47	0.60	1.01	0.29	0.88	0.38	0.16	9.79
1889	0.22	0.34	0.65	2.07	3.39	2.06	0.78	0.95	0.42	3.16	0.42	0.02	14.48
1890	0.13	0.21	0.22	3.92	1.19	0.12	1.27	3.14	0.07	.....	.....	.....	.....
Means	0.73	0.49	0.77	1.90	2.72	1.72	1.56	1.03	0.90	1.15	0.48	0.30	13.75

COLORADO SPRINGS, COLO.

1871	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.33	.....
1872	0.09	0.24	1.10	2.05	3.24	2.35	4.71	3.75	0.50	0.04	0.26	0.23	18.56
1873	0.03	0.05	0.19	0.96	1.76	2.65	4.53	3.28	1.70	0.65	0.00	0.15	15.95
1874	0.06	0.54	0.50	3.55	5.90	0.20	0.81	0.91	3.37	0.19	0.35	0.15	16.53
1875	0.24	0.56	1.12	0.30	1.03	1.82	6.67	2.39	2.23	0.13	1.19	0.29	17.37
1876	0.12	0.19	0.63	0.52	3.83	1.89	1.36	.....	.....	.....	.....	.....	.....
1877	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.22	0.18	.....
1878	0.02	0.02	[1.80]	0.20	1.69	3.78	2.80	1.66	1.12	0.45	1.10	1.66	[16.30]
1879	0.38	0.09	0.73	1.43	2.23	0.42	.....	.....	.....	.....	.....	.....	.....
1880	0.22	0.24	0.59	.....	.....	.....	5.27	.....	.....	.....	.....	.....	.....
1883	0.35	T	0.17	0.86	1.51	.....	.....	0.97	1.78	.....	0.00	.....	.....
1885	.....	.....	0.12	1.33	1.84	.....	.....	.....	.....	.....	.....	.....	.....
1886	0.60	0.25	0.39	4.82	0.12	3.06	2.91	1.39	0.33	0.28	0.19	0.15	14.49
1887	0.06	0.22	0.19	1.54	2.24	1.88	4.75	4.42	0.80	0.35	0.40	0.08	16.93
1888	0.10	0.45	0.28	1.51	2.42	0.01	1.91	1.18	0.13	0.84	0.22	0.07	9.12
1889	0.16	0.60	0.12	1.17	2.34	1.77	2.88	1.49	0.86	2.08	0.16	0.14	13.77
1890	0.41	0.13	0.39	3.90	1.43	0.41	1.64	4.99	0.17	.....	.....	.....	.....
Means	0.20	0.26	0.55	1.72	2.26	1.69	3.45	2.14	1.28	0.56	0.37	0.31	14.79

Monthly and annual precipitation at stations in Colorado—Continued.

CRAWFORD, FORT, COLO.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1889	2.36	0.50	[0.52]	0.78	0.41	0.38	0.82	1.35	0.67	0.44	0.37	1.20	.....
1890	0.56	0.55	1.17	1.22	0.17	0.02	0.30	1.58	0.53*g*	.....	.....	.....	.....
Means	1.46	0.52	0.85	1.00	0.29	0.20	0.56	1.46	0.60	0.44	0.37	1.20	8.95

CROOK, COLO.

1890	.....	.....	0.01	2.66	0.77	1.93	0.93	0.85*k*	0.00	.....	.....	.....	.....

DEER TRAIL, COLO.

1889	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	T	.....
1890	0.30	0.30	T	1.20	T	0.74	2.50	.....	0.00	.....	.....	.....	.....
Means	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

DELTA, COLO.

1888	.....	.....	.....	.....	.....	.....	.....	.....	T	1.79	2.15	0.67	.....
1889	0.41	0.48	0.20	0.40	0.03	0.00	0.75	0.61	1.30	0.57	0.95	3.15	8.85
1890	0.80	0.85	0.83	0.98	0.45	0.07*e*	0.79*e*	1.59	0.48	.....	.....	.....	.....
Means	0.60	0.66	0.52	0.69	0.24	0.04	0.77	1.10	0.59	1.18	1.55	1.91	9.85

DENVER, COLO.

1869	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.34	.....
1870	1.80	1.70	0.70	2.80	0.34	0.52	0.51	0.12	2.85	0.68	0.54	0.73	13.29
1871	0.46	0.23	1.81	1.01	2.56	0.05	0.51	0.27	1.18	0.40	3.10	0.77	12.35
1872	0.55	0.22	1.71	2.09	3.74	2.07	2.69	1.75	1.57	0.68	0.69	0.29	18.05
1873	0.13	0.24	0.22	2.43	0.75	2.24	2.00	1.41	0.89	0.73	0.16	0.61	11.81
1874	0.84	0.53	0.49	1.70	2.43	1.21	3.35	0.68	1.34	0.64	0.08	0.17	13.46
1875	0.38	0.60	0.39	2.24	1.94	0.43	4.32	1.97	2.89	0.22	1.28	0.59	17.25
1876	0.21	0.11	1.80	1.22	8.57	1.10	1.16	2.03	0.60	0.12	1.50	1.70	20.12
1877	1.90	0.40	1.40	2.77	2.30	1.93	0.23	1.30	0.38	2.15	0.73	0.79	16.28
1878	0.10	0.48	1.82	0.05	2.90	2.78	1.38	2.25	1.23	0.80	0.67	1.05	15.51
1879	0.40	0.39	1.00	2.62	3.36	0.32	0.64	1.38	0.02	0.19	0.21	0.33	10.86
1880	0.38	0.32	0.21	0.31	1.11	1.22	1.38	1.46	0.89	1.37	0.83	0.10	9.58
1881	0.49	1.22	0.87	0.50	2.21	0.09	2.50	2.33	0.57	0.32	1.68	0.00	12.78
1882	0.57	0.20	0.20	1.47	2.98	4.96	0.66	1.20	0.06	0.75	0.71	0.73	14.49
1883	2.35	0.45	0.21	3.10	4.30	0.85	2.27	0.75	1.08	1.49	0.32	2.32	19.49
1884	0.22	0.86	0.93	3.33	4.61	1.47	0.65	1.71	0.13	0.21	0.19	0.76	15.07
1885	0.41	0.75	0.97	4.94	2.13	0.66	1.33	1.18	1.22	0.73	0.55	1.08	15.95
1886	0.62	0.72	2.36	2.79	0.09	2.26	0.50	1.62	0.98	0.33	1.93	0.87	15.07
1887	0.67	0.30	0.23	2.16	1.13	0.53	2.49	2.68	0.97	0.97	0.22	0.14	12.49
1888	0.11	0.37	1.15	1.71	2.66	0.29	0.41	1.51	0.11	0.77	0.33	0.09	9.51
1889	0.50	0.70	0.40	1.34	3.44	1.88	2.94	0.33	0.28	2.11	0.53	0.30	14.75
1890	0.18	0.46	0.35	2.50	2.01	T	0.79	1.89	0.17	.....	.....	.....	.....
Means	0.63	0.54	0.92	2.07	2.61	1.34	1.60	1.40	0.96	0.78	0.81	0.66	14.32

DURANGO, COLO.

1886	.....	.....	.....	.....	.....	.....	.....	.....	4.20	2.29	1.44	.....	.....
1887	0.46	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1889	1.70	1.60?	2.30?	1.00	0.60	1.30	1.90	1.40	1.30	3.10	1.97	4.18	22.35
1890	1.90	0.46	1.80	2.30	0.00	0.40	0.30	.....	.....	.....	.....	.....	.....
Means	1.35	1.03	2.05	1.65	0.30	0.57	0.73	1.40	2.75	2.70	1.70	2.09	18.32

Monthly and annual precipitation at stations in Colorado—Continued.

EAGLE FARM (NEAR PUEBLO), COLO.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1889	.....	.....	.....	.....	.....	.....	.....	1.05	1.12	5.50	0.96	0.31	.....
1890	0.20	0.23	0.55	4.40	1.73	0.90	1.18	3.37	0.58	.....	.....	.....	.....
Means	0.20	0.23	0.55	4.40	1.73	0.90	1.18	2.21	0.65	5.50	0.96	0.31	18.82

ELKHORN, COLO.

1889	.....	.....	.....	.....	.....	.....	.....	1.68	0.57	2.65	0.40	0.42	.....
1890	.....	.....	0.91	.....	.....	0.03	1.60	2.23	0.37	.....	.....	.....	.....
Means	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

FIRST VIEW, COLO.

1889	.....	.....	.....	1.90	1.05	2.92	.....	.....	.....	1.35	0.25	[0.05]	.....
1890	0.05	0.15	T	1.73	0.97	1.60	3.23	1.92	0.98	.....	.....	.....	.....
Means	0.05	0.15	T	1.82	1.01	2.92	3.23	1.92	0.98	1.35	0.25	[0.05]	13.73

FOUNTAIN, COLO.

1871	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.19	0.30	.....
1872	.....	0.10	0.70	1.12	.....	.....	5.65	1.23	0.02	.....	.....	0.03	.....
1873	[0.00]	0.04	0.04	0.90	1.60	[2.60]	2.13	0.06	1.20	0.50	2.50	[0.06]	[11.63]
1874	.....	.....	.....	3.60	1.03	0.16	0.12	.....	.....	0.02	0.15	0.40	.....
1875	0.45	0.63	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Means	0.22	0.26	0.37	1.87	1.32	1.38	2.63	0.64	0.61	0.26	0.95	0.20	10.71

FRASER, COLO.

1889	.....	.....	.....	1.05	1.94	1.26	0.61	1.33	[0.60]	0.44	2.65	1.88	.....
1890	1.40	2.55	3.68	3.50	.....	.....	.....	.....	.....	.....	.....	.....	.....
Means	1.40	2.55	3.68	2.28	1.94	1.26	0.61	1.33	[0.60]	0.44	2.65	1.88	[20.62]

FRUITA, COLO.

1889	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.82	.....
1890	0.87	0.93	0.62	0.30	0.09	T	0.87	0.74	0.87	.....	.....	.....	.....
Means	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

GARLAND, FORT, COLO.

1858	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.22	0.68	0.15	.....
1859	0.00	0.15	0.27	0.19	0.32	1.32	2.72	4.75	0.68	0.55	0.20	0.20	11.35
1860	0.20	0.08	0.53	0.33	0.00	0.72	2.61	0.77	0.85	0.25	0.24	0.04	6.62
1861	0.03	0.04	0.87	0.25	1.01	1.07	0.74	0.30	0.93	0.13	0.06	0.01	5.44
1862	0.24	0.02	0.16	0.40	0.24	0.41	1.26	1.46	1.78	0.00	0.22	0.14	6.33
1863	[0.54]	0.84	0.06	0.00	0.22	1.07	0.07	0.02	0.03	0.13	0.21	0.24	[3.43]
1864	.....	.....	.....	.....	.....	.....	0.06	.....	.....	.....	.....	.....	.....
1866	.....	.....	.....	.....	.....	.....	.....	.....	0.79	0.35	0.08	0.13	.....
1867	0.06	0.15	0.12	0.89	0.21	0.01	0.36	0.29	0.26	0.02	0.06	[0.72]	[3.15]
1868	0.16	.....	0.12	.....	.....	0.01	7.19	3.26	1.80	0.42	0.03	4.01	.....
1869	0.65	0.90	0.28	0.36	2.30	0.07?	1.28	1.03	2.55	0.16	0.14	3.00	12.72
1870*	0.65	1.05	0.85	7.57	0.60	6.65	7.30	7.50	0.90	1.30	0.15	3.35	37.87
1871*	1.20	1.45	2.80	2.45	1.45	0.25	1.00	1.25	2.90	1.40	7.10	1.75	25.00

* The amounts for 1870–'72 seem to be unreliable.

Monthly and annual precipitation at stations in Colorado—Continued.

GARLAND, FORT, COLO.—Continued.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1872*	2.25	2.75	3.65	2.78	6.25	7.75	10.30	5.68	0.83	0.10	0.00	0.00	42.34
1873	0.00	2.25	0.00	1.75	0.00	1.58	0.80	0.48	0.18	0.50	0.01	0.20	7.75
1874	0.50	2.80	0.50	0.15	0.08	0.20	1.72	1.12	2.05	1.23	0.25	0.50	11.10
1875	1.50	1.30	2.50	0.15	2.23	0.15	[2.41]	1.00	2.50	0.00	0.50	0.58	[14.82]
1876	0.22	0.22	1.06	0.72	0.16	0.18	1.18	1.56	1.16	0.48	0.24	0.26	7.44
1877	0.34	0.34	0.06	0.80	0.35	2.42	1.89	0.00	0.60	0.70	0.48	0.14	8.12
1878	0.20	0.64	0.24	0.00	.....	.....	.....	2.00	0.50	0.08	1.02	0.32	.....
1879	0.18	0.40	0.26	1.48	0.40	0.08	2.44	1.74	0.86	0.76	0.48	0.62	9.70
1880	0.46	0.32	0.48	0.52	0.54	0.18	1.30	1.52	1.02	0.64	0.66	0.18	7.82
1881	0.70	0.46	0.48	0.56	0.98	0.22	1.88	2.42	0.95	1.16	0.56	0.10	10.47
1882	0.92	0.22	0.16	0.60	1.64	0.90	1.14	1.28	0.42	0.30	0.36	0.20	8.14
1883	0.90	0.30	0.50	0.60	1.48	0.84	2.50	3.40	0.80	0.28	[0.05]	[0.50]	[12.15]
Means	0.54	0.79	0.72	1.07	1.03	1.32	2.41	1.95	1.11	0.51	0.57	0.72	12.74

* The amounts for 1870–'72 seem to be unreliable.

GEORGETOWN, COLO.

1878	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.75	.....	0.15	.....
1879	0.11	0.20	1.30	0.60	0.20	.....	1.20	.....	.....	.....	.....	.....	.....
1886	.....	.....	.....	.....	.....	.....	.....	1.40	1.01	0.68	0.85	1.01	.....
1887	1.07	0.11	0.60	2.11	1.17	0.35	2.60	2.21	0.84	0.47	0.32	0.86	12.71
1888	0.36	0.39	0.48	0.98	2.83	0.96	2.82	1.96	0.07	0.98	0.70	0.11	12.64
1889	0.19	0.45	0.45	0.91	3.45	1.50	1.71	1.31	0.90	1.59	1.23	0.70	14.39
1890	0.35	0.82	0.86	1.84	1.12	0.31	1.75	2.50	0.79	.....	.....	.....	.....
Means	0.42	0.39	0.74	1.29	1.75	0.78	2.02	1.88	0.72	0.89	0.78	0.57	12.23

GLENWOOD SPRINGS, COLO.

1888	.....	.....	.....	0.34	1.28	.....	1.23	2.70	0.22	1.72	2.22	1.97	.....
1889	1.24	1.50	1.00	0.54	1.06	0.54	0.51	2.44	0.94	1.53	2.42	3.87	17.59
1890	0.89	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Means	1.06	1.50	1.00	0.44	1.17	0.54	0.87	2.57	0.58	1.62	2.32	2.92	16.59

GOLDEN CITY, COLO.

1860	.....	.....	.....	.....	5.40	3.50	3.94	0.50	2.20	.....	.....	.....	.....
1871	0.70	1.02	1.40	2.20	2.80	0.70	0.80	0.40	.....	.....	.....	.....	.....
1872	.....	.....	.....	.....	4.91	1.21	0.90	.....	0.12	2.12	0.60	.....	.....
1873	.....	.....	0.41	2.20	1.12	3.70	0.80	1.80	2.92	.....	.....	0.55	.....
1874	0.80	1.13	0.90	1.82	.....	.....	.....	.....	.....	0.00	0.40	.....	.....
1875	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.55	.....
1876	0.50	1.21	3.72	1.68	6.09	0.99	1.33	0.75	0.93	0.30	0.97	.....	.....
1877	.....	0.51	0.88	5.30	2.58	2.37	.....	.....	.....	.....	.....	0.00	.....
1883	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.00	.....
1884	0.30	0.95	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1886	.....	.....	.....	.....	.....	.....	.....	.....	1.15	.....	2.82	.....	.....
1887	.....	.....	.....	.....	0.50	.....	.....	2.12	0.46	.....	.....	.....	.....
Means	0.58	0.96	1.46	2.64	3.34	2.08	1.55	1.11	1.30	0.81	1.20	0.52	17.55

GRAND JUNCTION, COLO.

1885	.....	.....	.....	1.74	.....	.....	1.25	1.62	0.18	.....	.....	.....	.....
1887	.....	.....	.....	.....	0.34	0.20	1.60	1.48	1.93	1.13	1.09	0.88	.....
1888	0.98	0.39	0.87	0.58	.....	.....	.....	.....	.....	.....	.....	.....	.....
Means	0.98	0.39	0.87	1.16	0.34	0.20	1.42	1.55	1.06	1.13	1.09	0.88	11.07

Monthly and annual precipitation at stations in Colorado—Continued.

GREELEY, COLO.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1887	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.17	0.07	.....
1888	0.05	0.30	0.57	.....	.....	.....	1.29	1.77	.....	0.52	4.80	0.06	.....
1889	0.30	0.30	0.58	1.95	2.74	3.12	1.90	1.09	0.25	1.92	0.21	0.22	14.58
1890	0.10	0.25	0.36	2.92	1.21	0.14	.....	1.67	.....	.....	.....	.....	.....
Means	0.15	0.28	0.50	2.44	1.98	1.63	1.60	1.51	0.25	1.22	1.73	0.12	13.41

GUNNISON, COLO.

1884	.....	.....	1.20	T	.....	.....	.....	.....	.....	.....	.....	.....	.....
1888	.....	.....	.....	.....	.....	.....	3.28	1.17	0.13	0.73	0.26	0.00	.....
1889	0.29	0.02	0.05	3.10	0.12	0.16	0.10	0.82	0.48	T	3.60	1.28	10.02
1890	.....	.....	0.26	1.70	0.00	0.13	.....	.....	0.24	.....	.....	.....	.....
Means	0.29	0.02	0.50	1.60	0.06	0.14	1.69	1.00	0.30	0.36	1.93	0.64	8.53

HARDIN, COLO.

1889	.....	.....	.....	.....	.....	.....	.....	.....	0.30	1.47	0.30	0.65	.....
1890	0.18	0.05	0.05	2.43	0.96	0.18	1.12	3.80	.....	.....	.....	.....	.....
Means	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	11.49

HERMOSA (ANIMAS VALLEY), COLO.

1875	.....	.....	.....	0.40	0.80	0.30	2.50	1.10	2.30	0.02	1.40	1.10	.....
1876	1.20	1.50	0.50	0.10	0.10	0.20	2.60	3.50	2.70	1.90	0.14	0.03	14.47
1877	0.36	1.25	0.55	1.56	1.68	1.34	1.41	1.15	1.42	1.31	0.25	0.78	13.06
1878	0.39	2.50	0.45	0.20	0.90	1.20	0.80	2.15	2.00	0.30	1.52	1.67	14.08
1879	1.41	1.11	0.28	0.33	0.00	0.06	1.88	1.30	0.03	1.77	2.07	4.28	14.52
1880	1.99	1.48	0.62	0.41	0.10	0.40	3.53	1.89	0.21	2.10	0.90	2.21	15.84
1881	1.27	0.81	1.60	0.50	0.23	0.01	1.78	5.57	0.80	[0.20]	3.14	[0.80]	[16.71]
1882	.....	.....	.....	0.85	0.39	0.67	0.30	1.87	.....	.....	.....	.....	.....
Means	1.10	1.44	0.67	0.54	0.52	0.52	1.85	2.32	1.35	1.09	1.35	1.55	14.30

HOT SULPHUR SPRINGS, COLO.

1874	.....	.....	.....	.....	.....	0.01	2.18	1.62	1.34	1.59	2.06	0.67	.....
1875	3.67	0.77	1.38	0.71	1.50	0.35	1.03	1.36	1.43	0.36	2.57	1.09	16.22
1876	0.94	1.86	1.46	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Means	2.30	1.32	1.42	0.71	1.50	0.18	1.60	1.49	1.38	0.98	2.32	0.88	16.08

HUSTED, COLO.

1886	.....	.....	.....	.....	0.35	3.18	1.82	4.37	0.16	0.33	0.25	.....	.....
1887	.....	0.13	.....	.....	2.86	1.60	3.56	2.67	1.23	0.53	0.30	0.15	.....
1888	0.50	0.15	0.30	1.66	5.33	0.02	1.78	1.35	0.19	0.84	0.22	0.02	12.36
1889	0.54	0.25	0.27	2.17	3.23	1.63	2.59	0.78	0.55	2.03	0.33	0.28	14.65
1890	0.09	0.13	0.57	2.61	1.06	0.61	2.22	4.49	0.19	.....	.....	.....	.....
Means	0.38	0.16	0.38	2.15	2.57	1.41	2.39	2.73	0.46	0.93	0.28	0.15	13.99

HUTCHINSON, COLO.

1875	1.11	0.65	1.12	1.60	1.31	0.31	5.04	2.00	3.39	0.27	1.80	1.00	19.60

Monthly and annual precipitation at stations in Colorado—Continued.

IDAHO SPRINGS, COLO.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1886	.....	.....	.....	.....	.....	.....	.....	2.39	0.23	0.64	.....	.....	.....
1887	.....	.....	.....	.....	0.31	0.52	4.26	3.29	1.27	0.64	0.31	0.43	.....
1888	.....	.....	.....	.....	4.13	0.67	2.69	2.22	0.23	1.15	0.63	0.05	.....
1889	0.22	0.33	0.84	1.14	3.91	1.28	2.63	1.26	0.59	.....	0.48	0.46	.....
1890	0.30	0.54	.....	.....	1.53	0.38	.....	.....	.....	.....	.....	.....	.....
Means	0.26	0.44	0.84	1.14	2.47	0.71	3.19	2.29	0.58	0.81	0.47	0.31	13.51

JULESBURG, COLO.

1888	.....	.....	.....	.....	5.81	1.33	1.06	1.64	0.10	0.56	.....	0.02	.....
1889	0.08	0.07	0.72	3.05	2.16	3.90	3.52	1.12	0.35	0.74	0.31	[0.30]	[16.32]
1890	.....	.....	.....	3.07	2.54	1.72	0.68	0.50	0.49	.....	.....	.....	.....
Means	0.08	0.07	0.72	3.06	3.50	2.32	1.75	1.09	0.31	0.65	0.31	0.16	14.00

KIRK, COLO.

1890	.....	0.40	0.35	5.59	2.12	1.37	1.07	2.04	0.00	.....	.....	.....	.....

KIT CARSON, COLO.

1877	.....	.....	.....	.....	.....	.....	.....	0.94	0.75	0.75	0.00	1.02	.....
1878	0.00	0.22	0.95	0.00	1.32	4.66	1.61	2.64	0.79	0.03	0.20[g]	0.16	12.58
1879	0.43	0.21	0.00	0.12	0.02	0.22	0.75	0.53	0.00	0.00	0.10	0.07	2.45
1880	0.22	.....	.....	.....	.....	.....	0.00	0.00	.....	.....	.....	.....	.....
1889	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.25	.....	.....
1890	0.05	0.05	.....	0.50	0.40	0.92	1.50	1.50	0.00	.....	.....	.....	.....
Means	0.18	0.16	0.48	0.21	0.58	1.93	0.96	1.12	0.38	0.26	0.14	0.42	6.82

LAMAR, COLO.

1889	0.09	0.64	0.64	3.34	1.77	2.56	2.14	0.83	0.60	2.39	0.40	0.04	15.44
1890	0.20	0.16	0.05	2.14	1.02	1.57	1.62	1.63	0.33	.....	.....	.....	.....
Means	0.14	0.40	0.34	2.74	1.40	2.06	1.88	1.23	0.46	2.39	0.40	0.04	13.48

LAS ANIMAS, COLO.

1881	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.21	0.63	0.04	.....
1882	0.04	0.02	0.10	0.98	5.06	2.49	1.69	1.89	T	0.25	0.01	0.08	12.65
1883	0.14	0.52	0.15	0.93	1.50	2.63	0.67	0.65	1.35	0.69	0.21	1.68	11.12
1884	0.26	0.50	1.19	1.05	4.46	2.79	1.75	2.17	0.06	0.43	0.32	0.72	15.70
1885	0.22	0.32	0.36	0.45	0.49	2.14	2.71	3.75	0.99	1.19	0.70	0.91	14.23
1886	0.68	0.13	0.33	2.64	0.25	1.19	4.66	1.17	1.23	0.20	0.23	0.07	12.78
1887	0.13	0.11	0.09	2.55	2.92	1.89	1.09	2.35	0.63	1.10	0.28	0.32	13.46
1888	0.06	0.59	0.64	2.59	0.58	.....	.....	.....	.....	.....	.....	.....	.....
1889	.....	.....	.....	.....	.....	.....	.....	0.06	0.06	1.08	0.11	0.00	.....
1890	0.20	0.40	0.00	2.30	1.12	0.05	0.22	0.90	0.00	.....	.....	.....	.....
Means	0.22	0.32	0.38	1.69	2.05	2.19	2.10	1.72	0.62	0.64	0.30	0.48	12.71

LA VETA, COLO.

1889	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.48	.....
1890	0.00	.....	.....	.....	.....	1.13	2.93	2.54	1.25	.....	.....	.....	.....
Means	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Monthly and annual precipitation at stations in Colorado—Continued.

LEADVILLE, COLO.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1888	.....	.....	.....	.....	.....	0.35	1.77	1.06	0.27	1.30	0.68	0.31	.....
1889	0.52	0.48	0.68	1.31	2.20	0.66	0.84	1.58	0.53	0.69	1.64	1.67	12.80
1890	0.42	0.68	1.24	0.24	†	†	0.81	0.68	1.20	.....	.....	.....	.....
Means	0.47	0.58	0.96	0.78	2.20	0.50	1.14	1.11	0.67	1.00	1.16	0.99	11.56

LE ROY, COLO.

1889	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.37	.....	0.10	.....
1890	.....	.....	0.07	2.18	1.03	1.96	.....	.....	.....	.....	.....	.....	.....

LEWIS, FORT, COLO.

1880	3.20	1.90	.....	0.10	.....	.....	.....	.....	.....	.....	.....	.....	.....
1881	[2.00]	0.70	0.08	0.40	0.20	T	1.50	3.80	1.40	1.70	3.00	0.05	[14.83]
1882	0.70	0.13	0.50	1.20	0.60	2.00	1.50	1.80	1.00	0.20	1.20	0.10	10.93
1883	0.11	0.50	1.00	0.43	1.97	1.05	2.89	0.91	0.65	2.40	T	2.44	14.35
1884	0.25	3.41	4.24	1.57	1.08	1.24	0.24	2.86	1.15	2.10	[T]	4.30	[22.44]
1885	T	0.44	1.04	2.62	0.70	1.28	1.52	1.78	0.79	0.48	1.76	1.26	13.67
1886	3.91	1.45	0.88	2.74	0.72	0.32	T	3.81	1.62	2.02	1.74	0.26	19.47
1887	0.16	[0.30]	0.40	1.20	0.30	0.38	7.54	2.60	2.62	0.72	1.74	1.12	[19.08]
1888	0.38	0.20	1.40	1.42	0.24	0.02	1.54	1.14	0.42	1.27	1.74	1.19	10.96
1889	1.62	0.80	0.95	0.20	0.40	0.60	3.26	1.07	0.90	2.28	2.05	7.68	21.81
1890	5.20	2.30	1.75	3.13	0.10	0.45	0.96	2.35	1.03	.....	.....	.....	.....
Means	1.59	1.10	1.22	1.36	0.63	0.73	2.22	2.20	1.17	1.46	1.47	2.04	17.19

LIVERMORE, COLO.

1889	.....	.....	.....	.....	.....	.....	.....	1.33	0.70	3.82	.....	0.04	.....
1890	.....	.....	.....	2.90	0.62	0.02	1.15	2.34	.....	.....	.....	.....	.....

LONGMONT, COLO.

1887	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.25	.....	.....	.....
1888	.....	.....	.....	1.26	4.11	0.04	1.57	0.54	0.03	1.81	0.36	0.08	.....
1889	0.21	0.73	0.41	1.71	3.53	1.68	0.21	0.37	0.63	3.24	0.40	0.04	13.16
1890	0.35*g*	.....	.....	5.72	.....	0.19	0.42	2.75	0.16	.....	.....	.....	.....
Means	0.28	0.73	0.41	2.90	3.82	0.64	0.73	1.22	0.27	1.77	0.38	0.06	13.21

LYON, FORT, COLO.

1862	.....	.....	.....	.....	.....	2.60	0.67	0.48	1.79	.....	.....	.....	.....
1863	.....	.....	.....	.....	0.58	.....	.....	.....	.....	.....	.....	.....	.....
1867	0.32	0.12	0.16	2.00	4.52	1.40	2.53	0.37	0.04	0.00	0.07	0.15	11.77
1868	0.02	0.13	1.87	1.60	0.14	2.09	3.13	1.03	1.00	0.05	0.10	0.00	11.16
1869	.....	0.32	0.66	0.28	0.55	1.51	4.08	1.33	0.09	.....	0.00	0.04	.....
1870	0.14	0.08	0.00	2.04	0.34	0.61	1.46	2.78	4.72	3.75	0.00	0.28	16.20
1871	0.07	0.06	0.38	0.96	1.34	0.63	1.02	1.02	1.60	0.04	0.51	0.04	7.67
1872	0.03	0.60	0.14	1.82	2.24	1.94	6.30	3.05	0.62	0.04	0.10	0.09	16.97
1873	0.04	0.04	0.02	0.30	4.82	1.62	2.84	0.23	1.56	0.04	0.00	0.07	11.58
1874	0.18	0.86	0.68	2.02	5.42	0.11	0.14	2.28	1.18	1.59	T	0.12	14.58
1875	[0.40]	[0.50]	T	0.60	1.35	0.02	3.87	2.84	1.04	0.13	0.10	0.16	[11.01]
1876	[0.20]	0.30	T	0.20	0.74	1.88	2.36	2.78	1.25	0.00	[0.20]	T	[9.91]
1877	[0.70]	0.20	0.13	2.07	1.35	1.38	0.56	2.06	1.78	0.64	0.14	0.69	[11.70]

Monthly and annual precipitation at stations in Colorado—Continued.

LYON, FORT, COLO.—Continued.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1878	0.00	[0.50]	0.78	0.42	1.14	4.08	0.77	4.09	0.21	T	1.38	0.10	[13.47]
1879	0.10	0.04	T	0.35	1.30	T	1.33	1.18	0.09	0.00	0.10	[0.05]	[4.54]
1880	[0.01]	0.00	[0.05]	[0.40]	1.09	0.55	3.09	4.92	0.95	1.32	0.42	T	[12.80]
1881	?	.....	0.60	0.29	2.78	0.20	0.61	1.58	.....	.....	.....	T	.....
1882	.....	.....	.....	0.80	3.40	1.20	0.60	0.40	T	0.20	T	T	.....
1883	.....	.....	.....	0.60	1.35	1.69	.....	0.24	0.96	0.50	1.50	1.20	.....
1884	[0.30]	[0.60]	0.40	1.10	3.11	1.60	2.20	1.70	0.20	0.79	0.20	[0.70]	[12.90]
1885	[0.20]	[0.50]	0.10	0.20	0.20	2.55	3.45	1.85	0.30	0.60	0.20	0.60	[10.75]
1886	.....	T	0.28	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1888	.....	.....	.....	.....	.....	.....	.....	.....	0.04	0.63	0.14	T	.....
1889	0.53	T	0.64	1.19	1.09	1.41	2.62	1.06	0.09	2.46	[0.50]	[0.05]	[11.64]
Means	0.20	0.27	0.36	0.97	1.85	1.38	2.18	1.77	0.93	0.67	0.28	0.21	11.07

MASSACHUSETTS, FORT, COLO.

1852	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.84	6.34	1.45	.....
1853	0.22	0.76	0.94	0.39	1.49	1.11	3.04	1.48	1.25	.....	.....	.....	.....
1854	.....	.....	.....	.....	3.93	0.24	2.14	2.61	1.53	0.35	.....	2.30	.....
1855	0.00	0.67	1.47	0.41	0.98	0.85	2.60	.....	3.33	0.00	5.27	0.38	.....
1856	0.15	2.14	0.35	1.35	0.00	0.55	2.19	3.30	1.55	0.95	0.79	0.55	13.87
1857	0.80	0.52	0.20	1.51	0.75	0.95	0.72	3.98	1.34	1.19	2.03	0.67	14.66
1858	0.54	0.20	0.08	2.11	1.00	0.58	1.36	.....	.....	.....	.....	.....	.....
Means	0.34	0.86	0.61	1.15	1.36	0.72	2.01	2.84	1.80	0.87	3.61	1.07	17.24

MIDDLE BOX ELDER, COLO.

1889	.....	.....	.....	.....	.....	.....	.....	0.39	0.28	3.91	.....	0.03	.....
1890	.....	.....	0.42	4.56	1.33	0.04	1.49	.....	.....	.....	.....	.....	.....

MONTE VISTA, COLO.

1886	.....	.....	.....	.....	.....	.....	.....	0.76	0.94	0.72	0.28	.....	.....
1887	0.15	[0.25]	0.44	1.00	[0.30]	0.62	2.06	2.06	0.40	0.02	0.04	1.14	[8.48]
1888	0.50	0.88	0.16	1.46	[0.40]	0.00	0.37	0.71	0.23	1.15	0.35	0.00	[6.21]
1889	0.33	0.00	0.00	0.99	0.16	0.62	1.26	0.41	0.29	0.64	0.23	0.08	5.01
1890	0.00	0.12	0.56	2.13	0.18	T	1.27	0.92	1.30	.....	.....	.....	.....
Means	0.24	0.31	0.29	1.40	0.26	0.31	1.24	0.97	0.63	0.63	0.22	0.41	6.91

MONTROSE, COLO.

1885	.....	0.22	0.67	1.86	0.86	1.02	1.09	2.23	0.53	0.56	0.60	0.71	.....
1886	0.79	0.13	0.49	3.14	0.57	0.01	0.33	1.38	1.06	0.95	0.54	0.50	9.89
1887	0.16	0.24	0.28	1.21	0.07	0.04	1.34	2.12	1.56	1.19	1.08	0.35	9.64
1888	0.45	0.38	0.60	0.42	0.84	0.05	0.51	1.48	0.16	1.66	1.74	0.21	8.50
1889	0.59	0.44	0.05	0.85	0.60	0.28	0.84	0.35	0.80	0.47	0.58	1.34	7.20
1890	0.80	0.78	0.56	1.36	0.16	0.03	.....	.....	.....	.....	.....	.....	.....
Means	0.56	0.36	0.44	1.48	0.52	0.24	0.82	1.51	0.82	0.97	0.89	0.62	9.23

MORAINE, COLO.

1889	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.57	[0.40]	0.64	.....
1890	0.81	0.76	0.71	2.77	[1.30]	1.05	2.42	3.40	0.82	.....	.....	.....	.....
Means	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	16.65

Monthly and annual precipitation at stations in Colorado—Continued.

MORGAN, FORT, COLO.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1866	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.44	.....
1867	0.31	.....	.....	0.00	2.55	0.73	0.52	0.60	0.00	0.19	.....	.....	.....
1868	.....	0.29	0.37	0.11	.....	.....	.....	.....	.....	.....	.....	.....	.....
1888	.....	1.01	0.06	1.29	.....	.....	.....	.....	.....	.....	.....	.....	.....
1889	.....	.....	.....	.....	.....	.....	.....	.....	0.32	0.86	[0.35]	[0.25]	.....
1890	.....	0.03	T	2.35	0.89	0.37	2.94	1.24	0.00k	.....	.....	.....	.....
Means	0.31	0.44	0.15	0.94	1.72	0.55	1.73	0.92	0.11	0.52	0.35	0.34	8.08

OURAY, COLO.

1888	.....	.....	.....	.....	.....	0.27	1.54	2.67	0.26	4.06	[4.69]	0.77	.....
1889	0.89	0.96	0.57	2.10	[0.20]	.....	.....	.....	.....	.....	.....	.....	.....
Means	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	17.95

PALMER LAKE, COLO.

1889	0.62	0.33	0.71	2.94	3.74	2.57	3.00	2.67	1.31	3.18	0.78	0.45	22.30
1890	0.20	1.19	0.90	3.69	1.01	.....	.....	.....	.....	.....	.....	.....	.....
Means	0.41	0.76	0.80	3.32	2.38	2.57	3.00	2.67	1.31	3.18	0.78	0.45	21.63

PAOLI, CAMP, COLO.

1888	.....	.....	.....	.....	.....	.....	.....	0.87	0.10	0.44	T	.....	.....
1889	0.14	0.08	0.82	4.61	3.36	3.50	0.68	2.89	0.50	0.95	0.08	[0.20]	17.81
Means	0.14	0.08	0.82	4.61	3.36	3.50	0.68	1.88	0.30	0.70	0.04	[0.20]	16.31

PEYTON, COLO.

1888	.....	.....	.....	.....	.....	.....	1.23	0.70	0.15	0.50	0.14	[0.10]	.....
1889	.....	.....	0.33	1.71	2.62	1.56	2.41	1.26	0.94	.....	.....	.....	.....
1890	T	0.35	0.30	2.66	1.15	0.77	0.70	2.89	0.36	.....	.....	.....	.....
Means	T	0.35	0.32	2.18	1.88	1.16	1.45	1.62	0.48	0.50	0.14	[0.10]	10.18

PIKE'S PEAK, COLO.

1873	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.30	0.61	.....
1874	1.32	1.16	1.21	5.20	2.98	0.58	6.00	3.73	2.31	1.80	0.36	0.22	26.87
1875	0.76	0.50	1.03	0.92	2.08	1.70	8.13	3.52	3.20	0.38	1.54	0.98	24.74
1876	0.85	0.61	2.03	1.04	4.73	2.88	2.20	4.63	1.60	1.45	1.06	0.79	23.87
1877	1.49	1.29	1.53	2.91	2.82	3.36	2.70	2.10	2.69	3.74	0.54	0.41	25.58
1878	0.29	1.45	2.95	3.77	4.32	3.49	5.46	6.12	2.42	0.24	7.81	4.55	42.87
1879	3.71	2.66	2.20	12.15	3.26	0.68	4.21	4.40	0.68	0.76	2.40	2.71	39.82
1880	4.26	3.34	2.79	2.04	2.17	0.79	6.69	4.30	3.87	4.64	4.07	1.69	40.65
1881	2.58	1.47	4.44	4.64	3.71	0.87	6.55	11.29	1.85	1.85	4.76	0.56	44.57
1882	1.78	0.36	2.65	1.79	12.34	3.10	2.13	3.22	0.39	0.40	0.22	0.44	28.82
1883	0.54	0.49	0.61	1.68	2.80	1.76	5.37	2.22	1.76	0.15	0.07	0.72	18.17
1884	0.10	0.76	0.39	0.43	2.90	0.94	0.41	0.25	0.49	0.99	0.12	1.50	9.28
1885	0.61	3.91	0.88	5.39	6.12	1.29	2.67	2.04	1.04	1.53	0.87	4.03	30.48
1886	4.04	0.84	4.72	6.33	0.40	2.44	3.30	3.18	0.71	1.31	1.07	1.17	29.51
1887	0.71	0.46	2.52	4.52	2.00	1.44	6.52	3.84	1.80	0.45	0.90	1.04	26.20
1888	0.26	1.15	1.47	2.09	2.40	1.01	4.16	2.63	0.93	.....	.....	.....	.....
Means	1.55	1.36	2.09	3.66	3.67	1.76	4.43	3.83	1.72	1.41	1.74	1.43	28.65

Monthly and annual precipitation at stations in Colorado—Continued.

PLATORO, COLO.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1889	.....	.....	.....	.....	.....	.....	.....	3.25	1.33	2.30	5.00	.....	.....
1890	.....	7.70	4.60	2.25	.....	.....	5.88	.....	.....	.....	.....	.....	.....

PLATTEVILLE, COLO.

1888	.....	.....	.....	.....	.....	.....	.....	6.68	1.45	T	0.07	0.02	.....
1889	0.02	0.08	0.09	0.40	0.29	1.26	[1.90]	.....	.....	.....	.....	.....	[12.26]
Means	0.02	0.08	0.09	0.40	0.29	1.26	1.90	6.68	1.45	T	0.07	0.02	12.26

PUEBLO, COLO.

1887	.....	0.16	0.40	1.42	3.23	1.30	.....	3.33	0.70	0.10	.....	.....	.....
1888	[0.30]	[0.50]	0.20	2.38	0.69	0.00	1.33	0.64	0.04	0.48	0.59	0.10	[7.25]
1889	0.34	0.24	0.51	1.57	1.40	0.84	0.81	1.60	0.69	1.62	0.72	0.16	10.50
1890	0.12	0.25	0.48	2.08	1.71	0.58	0.56	1.99	0.02	.....	.....	T	.....
Means	0.25	0.29	0.40	1.86	1.76	0.68	0.90	1.89	0.36	0.73	0.66	0.09	9.87

RANCHE (NEAR COMO), COLO.

1886	1.10	0.55	1.28	3.40	0.18	1.53	4.38	3.77	0.98	0.55	1.68	1.08	20.48
1887	.....	.....	.....	.....	0.45	1.16	4.78	3.11	1.12	1.08	1.00	0.52	.....
1888	0.33	0.52	1.49	1.24	1.66	1.13	2.84	2.18	0.19	1.45	0.40	0.09	13.52
1889	0.47	0.72	0.41	1.33	2.74	0.68	2.41	1.92	0.47	0.85	1.30	1.06	.....
1890	0.34	0.87	1.02	2.47	1.28	0.27	4.85	2.83	1.25	.....	.....	.....	.....
Means	0.56	0.66	1.05	2.11	1.26	0.95	3.85	2.76	0.80	0.98	1.10	0.69	16.77

RED CLIFF, COLO.

1888	.....	0.52	1.46	1.26	2.13	0.79	.....	.....	.....	.....	.....	.....	.....
1890	.....	.....	3.11	1.17	1.40	0.76	1.46	2.30	1.71	.....	.....	.....	.....
Means	.....	0.52	2.28	1.22	1.76	0.78	1.46	2.30	1.71	.....	.....	.....	.....

REYNOLDS, FORT, COLO.

1868	.....	.....	.....	.....	T	.....	.....	.....	.....	.....	0.40	0.40	.....
1869	0.27	0.65	0.50	3.43	3.53	1.30	1.00	2.73	1.49	0.25	0.75	0.07	15.97
1870	1.12	0.97	[1.06]	1.01	[1.69]	0.83	2.93	0.90	1.44	1.22	0.06	0.64	[13.87]
1871	0.40	0.55	0.35	1.17	1.55	0.28	0.61	0.30	2.76	T	6.90	0.02	14.89
1872	1.02	1.27	2.32	11.92	.....	.....	.....	.....	.....	.....	.....	.....	.....
Means	0.70	0.86	1.06	4.38	1.69	0.80	1.51	1.31	1.90	0.49	2.03	0.28	17.01

RIFLE FALLS, COLO.

1889	0.81	0.96	1.12	0.85	1.40	0.31	0.71	1.28	0.89	1.11	1.50	3.44	14.38
1890	0.46	2.66	.....	0.46	0.34	.....	0.08	.....	0.79	.....	.....	.....	.....
Means	0.61	1.81	1.12	0.66	0.87	0.31	0.40	1.28	0.84	1.11	1.50	3.44	13.98

Monthly and annual precipitation at stations in Colorado—Continued.

ROCKY FORD, COLO.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1888	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.53	0.30	0.01	.....
1889	0.36	0.12	0.67	2.14	1.65	0.75	4.50	1.32	0.26	1.68	0.77	0.05	14.27
1890	0.34	0.15	0.15	2.07	0.29	0.77	1.16	0.74	0.08	.....	.....	.....	.....
Means	0.35	0.14	0.41	2.10	0.97	0.76	2.83	1.03	0.17	1.60	0.54	0.03	10.93

SAGUACHE, COLO.

1886	.....	.....	.....	.....	.....	.....	.....	.....	0.45	0.50	0.45	.....	.....
1887	0.25	0.01	0.10	1.10	[0.30]	1.02	[4.00]	1.76	1.05	0.40	[0.50]	0.20	[10.69]
1888	0.10	0.00	0.14	0.67	0.61	0.16	0.88	0.79	T	1.05	0.00	0.01	4.41
1889	0.57	0.90	T	1.20	0.20	0.10	0.94	1.40	0.14	0.90	[0.30]	[0.40]	[7.05]
Means	0.31	0.30	0.08	0.99	0.37	0.64	1.94	1.32	0.41	0.71	0.31	0.20	7.58

SAN LUIS EX. STATION, COLO.

1889	.....	.....	.....	.....	.....	.....	.....	0.45	0.35	0.55	1.27	1.23	.....
1890	0.10	0.65	0.02	3.49	0.02	0.21	1.27	0.91	1.33	.....	.....	.....	.....
Means	0.10	0.65	0.02	3.49	0.02	0.21	1.27	0.45	0.35	0.55	1.27	1.23	9.61

SEDGWICK, FORT, COLO.

1867	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.06	0.05	.....
1868	1.85	4.98	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1869	.....	.....	1.25	.....	.....	.....	2.06	0.88	.....	0.42	.....	0.42	.....
1870	0.38	0.06	0.92	2.25	2.13	0.26	0.36	3.12	3.00	0.38	0.00	1.53	14.39
1871	0.14	0.26	0.68	2.20	.....	.....	.....	.....	.....	.....	.....	.....	.....
1889	.....	.....	.....	.....	.....	.....	.....	.....	0.30	0.73	0.05	0.06	.....
1890	0.05	0.14	0.05	2.57	0.68	0.87	0.90	0.63	0.00	.....	.....	.....	.....
Means	0.60	1.36	0.72	2.34	1.40	0.56	1.11	1.54	1.10	0.51	0.04	0.52	11.80

SHERIDAN LAKE, COLO.

1890	.....	.....	T	3.49	1.12	0.52	2.44	1.80	0.93	.....	.....	.....	.....

SILVERTON, COLO.

1875	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.40	2.14	1.64	.....
1876	1.12	0.51	1.72	0.52	0.10	0.17	0.65	[0.32]	[0.40]	.....	.....	.....	.....
1886	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.80	1.59	0.88	.....
1887	1.67	1.54	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Means	1.40	1.02	1.72	0.52	0.10	0.17	0.65	0.32	0.40	0.60	1.86	1.26	10.02

SOUTH PUEBLO, COLO.

1872	.....	.....	.....	.....	.....	.....	.....	.....	1.01	.....	0.05	0.67	.....
1873	0.03	0.01	0.17	0.46	1.16	1.11	3.35	0.48	0.51	0.28	[0.10]	[0.30]	[7.99]
1874	0.43	0.23	.....	3.30	.....	0.20	0.50	.....	1.49	0.12	0.23	0.41	.....
1875	0.28	1.85	2.05	0.60	[1.90]	0.40	4.50	1.20	3.60	0.20	1.00	0.20	[17.78]
1876	.....	2.30	0.55	.....	1.15	1.40	.....	.....	0.31	0.03	0.75	0.86	.....
1877	0.20	0. 0	0.13	3.29	0.70	2.32	2.39	0.75	2.34	0.63	0.00	[0.30]	[13.15]
1878	0.42	0.39	0.68	0.00	0.86	3.15	2.39	0.75	2.34	0.63	0.00	0.11	11.72
1883	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.60	0.00	0.54	.....

Monthly and annual precipitation at stations in Colorado—Continued.

SOUTH PUEBLO, COLO.—Continued.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1884	0.57	0.72	0.05	3.53	1.60	2.85	0.72	2.35	0.40	T	0.05	0.78	13.62
1885	0.35	0.60	0.40	1.76	1.86	1.27	2.83	4.62	0.82	0.57	T	0.73	15.81
1886	0.55	0.42	0.46	1.71	0.26	1.98	0.39	3.08	.....	.....	.....	.....	.....
1887	.....	0.16	0.40	1.42	3.23	1.30	.....	3.33	0.70	0.10	.....	.....	.....
1888	.....	.....	0.20	2.38	0.69	0.00	.....	.....	.....	.....	.....	.....	.....
1889	.....	0.24	0.51	1.57	1.40	0.84	0.81	.....	.....	.....	.....	.....	.....
Means	0.35	0.64	0.51	1.73	1.35	1.40	1.99	2.07	1.35	0.32	0.22	0.49	12.42

SPRINGFIELD, COLO.

1888	.....	.....	.....	.....	.....	2.16	5.55	1.14	0.49	0.67	0.27	[0.02]	.....
1889	0.40	0.84	0.42	1.91	1.02	2.43	2.22	0.10	.....	.....	.....	.....	.....
1890	.....	.....	.....	4.72	.....	1.22	1.68	1.49	0.43	.....	.....	.....	.....
Means	0.40	0.84	0.42	3.32	1.02	1.94	3.15	0.91	0.46	0.67	0.27	0.02	13.42

STAMFORD, COLO.

1890	0.45	2.00	2.00	3.75	0.70	0.37	0.72	.....	0.23	.....	.....	.....	.....

SUMMIT, COLO.

1876	.....	.....	.....	.....	.....	.....	.....	3.22	2.42	3.18	2.24	1.88	.....
1877	2.05	3.31	4.40	5.85	4.15	1.50	3.61	2.44	3.67	4.42	0.92	1.00	37.32
1878	0.70	2.96	5.58	5.12	1.28	2.98	3.72	5.10	1.25	0.30	2.30	2.58	33.87
1879	2.27	1.94	1.05	3.46	0.38	0.05	2.70	1.95	0.76	.....	.....	.....	.....
1880	.....	.....	.....	.....	.....	0.28	3.14	1.64	2.19	3.50	.....	.....	.....
Means	1.67	2.74	3.68	4.81	1.94	1.20	3.29	2.87	2.06	2.55	1.82	1.82	30.75

THON, COLO.

1888	[0.30]	[0.35]	0.41	2.05	4.03	0.14	1.87	1.97	0.09	0.65	0.06	0.06	[11.98]
1889	T	0.05	0.35	1.82	2.26	1.81	1.84	2.76	0.93	0.51	0.29	0.13	12.75
1890	0.07	0.14	0.18	1.28	1.80	.....	1.44	2.23	0.27	.....	.....	.....	.....
Means	0.12	0.18	0.31	1.72	2.70	0.98	1.72	2.32	0.43	0.58	0.18	0.10	11.34

TRINIDAD, COLO.

1877	.....	.....	.....	.....	.....	.....	.....	2.41	0.99	3.24	0.14	0.14	.....
1878	0.44	2.62	0.07	0.09	2.33	12.82	2.72	5.48	1.81	0.36	3.89	1.85	[34.48]
1879	0.42	0.92	0.07	2.93	2.54	1.99	2.70	2.58	0.31	0.37	0.90	0.03	15.76
1880	0.01	0.14	0.03	0.04	.....	1.09	3.75	2.50	2.26	.....	.....	.....	.....
Means	0.29	1.23	0.06	1.02	2.44	5.30	3.06	3.24	1.34	1.32	1.64	0.67	21.61

T. S. RANCH CAMP (9 MILES FROM WHITEWATER), COLO.

1887	[0.16]	0.51	1.36	1.51	0.85	0.31	[1.30]	1.83	1.37	0.95	0.65	0.28	[11.08]
1888	0.16	0.20	1.08	0.70	1.97	0.04	1.42	2.48	T	1.10	1.55	0.82	11.32
1889	0.33	0.84	0.34	0.50	0.60	0.14	T	0.52	0.85	1.64	0.69	2.22	8.71
1890	0.55	0.90	1.27	0.38	0.28	.07	0.82	3.12	2.06	.....	.....	.....	.....
Means	0.30	0.61	1.02	0.77	0.92	0.14	0.88	1.99	1.07	1.23	0.96	1.11	11.00

Monthly and annual precipitation at stations in Colorado—Continued.

UPPER PINE, COLO.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1889	.....	.....	.....	.....	.....	.....	.....	1.56	0.67	2.24	.....	0.48	.....
1890	.....	.....	2.74	2.72	1.82	0.30	2.00	1.64	0.00	.....	.....	.....	.....
Means	.....	.....	2.74	2.72	1.82	0.30	2.00	1.60	0.34	2.24	.....	0.48	.....

VILAS, COLO.

1889	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	T	T	.....
1890	0.33	0.11	0.14	3.82	0.86	0.82	1.17	0.69	.....	.....	.....	.....	.....
Means	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

VILLA GROVE, COLO.

1889	.....	.....	.....	2.01	1.46	0.00	0.39	1.73	0.49	1.35	[0.30]	[0.50]	.....
1890	1.30	0.60	[0.30]	0.06	0.10	.....	3.00	0.12	0.08	.....	.....	.....	.....
Means	1.30	0.60	0.30	1.04	0.78	0.00	1.70	0.92	0.28	1.35	[0.30]	[0.50]	9.07

WALDEN, COLO.

1887	.....	.....	.....	.....	.....	.....	.....	0.32	0.85	.....	.....	.....	.....
1888	0.15	1.29	1.05	2.25	1.93	0.30	1.45	1.93	0.07	1.15	[1.50]	0.25	13.12
1889	0.12	0.48	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Means	0.14	0.88	1.05	2.25	1.93	0.30	1.45	1.12	0.46	1.15	[1.50]	0.25	12.48

WATERVILLE, COLO.

1890	.....	.....	0.88	4.25	0.73	0.86	4.15	5.41	0.40	.....	.....	.....	.....

WATKINS, COLO.

1889	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.25	.....
1890	0.35	0.80	0.02	.....	0.75	.....	.....	3.12	0.00	.....	.....	.....	.....
Means	0.35	0.80	0.02	.....	0.75	.....	.....	3.12	0.00	.....	.....	0.25	.....

WESTCLIFFE, COLO.

1886	.....	.....	.....	8.00	0.92	1.91	.....	.....	0.12	.....	1.22	1.05	.....
1887	0.77	.....	.....	.....	.....	.....	6.63	.....	4.50	.....	.....	.....	.....
1889	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.95	1.39	0.05	.....
1890	0.12	0.50	0.39	2.32	0.27	0.30	2.92	T	1.05	.....	.....	.....	.....
Means	0.44	0.50	0.39	5.16	0.60	1.10	4.78	T	1.89	0.95	1.30	0.55	17.75

Monthly and annual precipitation at stations in Colorado—Continued.

WIGWAM, COLO.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1888	.....	.....	.....	.....	.....	0.13	0.34	1.42	T	0.85	0.55	T	.....
1889	0.22	0.35	0.46	1.52	1.91	1.53	0.65	1.08	1.56	1.86	0.40	0.23	11.77
1890	0.30	0.03	0.30	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Means	0.26	0.19	0.38	1.52	1.91	0.83	0.50	1.25	0.78	1.36	0.48	0.12	9.58

WRAY, COLO.

1890	.....	.....	.....	T	4.44	1.42	0.62	0.25	1.09	0.45	.....	.....	.....

YUMA, COLO.

1890	.....	.....	0.10	5.30	0.67	0.87	0.63	1.58	0.01	.....	.....	.....	.....

APPENDIX No. 47.

MEAN MONTHLY AND ANNUAL TEMPERATURE FOR STATIONS IN COLORADO.

The prefatory note to appendix No. 46 applies also to the temperature tables.

AGATE, COLO.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1889	.....	.....	43.8	.....	.....	.....	.....	.....	.....	47.6	28.5	31.3	.....
1890	29.0	26.4	40.9	37.0	53.9	77.0	83.4	.....	.....	.....	.....	.....	.....
Means	29.0	26.4	42.4	37.0	53.9	77.0	83.4	.....	.....	47.6	28.5	31.3	.....

ALMA, COLO.

1886	.....	.....	.....	29.3	42.8	49.0	54.4	52.4	44.0	32.5	18.8	21.5	.....
1887	13.8	14.6	26.2	30.8	40.6	51.9	.....	.....	.....	.....	28.1	13.1	.....
1888	[13.7]	19.9	20.7	34.8	37.5	49.8	54.3	49.4	46.1	34.5	23.4	19.9	[33.7]
1889	13.6	15.5	18.2	33.2	36.7	48.8	57.8	52.0	43.0	36.7	.....	.....	.....
1890	.....	.....	21.6	30.2	39.1	49.9	55.0	52.3	44.9	.....	.....	.....	.....
Means	13.7	16.7	21.7	31.7	39.3	49.9	55.4	51.5	44.5	34.6	23.4	18.2	33.4

APISHAPA, COLO.

1889	.....	.....	.....	.....	.....	.....	.....	.....	.....	36.7	32.2	41.0	.....
1890	27.5	33.6	36.5	47.6	59.0	68.5	72.8	74.6	71.5	.....	.....	.....	.....
Means	27.5	33.6	36.5	47.6	59.0	68.5	72.8	74.6	71.5	36.7	32.2	41.0	50.1

ASPEN, COLO.

1886	.....	.....	.....	.....	.....	.....	.....	.....	.....	42.3	.....	.....	.....
1887	.....	.....	.....	41.4	53.1	61.5	63.7	59.7	55.3	44.4	36.0	22.5	.....
1888	19.5	27.8	.....	42.0	43.5	54.0	60.0	.....	54.3	39.3	26.7	20.4	.....
1889	13.5	18.7	31.4	41.8	46.6	50.7	59.2	.....	.....	41.0	22.0	29.3	.....
1890	19.1	23.2	28.8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Means	17.4	23.2	30.1	41.7	47.7	55.4	61.0	59.7	54.8	41.8	28.2	24.1	40.4

BENNETT, COLO.

1888	.....	40.2	38.0	57.2	56.6	82.4?	92.4?	.....	.....	.....	.....	.....	.....
1889	.....	26.0	35.0	33.1	45.5	66.2	.....	.....	.....	.....	33.9	41.5	.....
1890	35.2	23.7	30.2	36.2	44.3	57.4	77.0	74.9	56.6	.....	.....	.....	.....
Means	35.2	30.0	34.4	42.2	48.8	68.7	84.7	74.9	56.6	.....	33.9	41.5	.....

BRECKINRIDGE, COLO.

1888	.....	.....	.....	.....	.....	.....	.....	.....	.....	32.4	.....	.....	.....
1889	25.0	19.0	29.0	38.0	41.3	48.6	56.4	56.3	47.0	46.8	27.6	33.8	39.1
1890	22.7	27.1	21.2	32.2	41.2	47.6	55.0	53.0	45.2	.....	.....	.....	.....
Means	23.8	23.0	25.1	35.1	41.2	48.1	55.7	54.6	46.1	39.6	27.6	33.8	37.8

Mean monthly and annual temperature at stations in Colorado—Continued.

BYERS, COLO.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1889	.....	.....	45.6	52.9	63.6	70.3	.....	.....	.....	50.3	34.6	42.4	.....
1890	27.5	30.6	39.7	53.2	62.4	83.5	82.5	71.8	66.0	.....	.....	.....	.....
Means	27.5	30.6	42.6	53.0	63.0	76.9	82.5	71.8	66.0	50.3	34.6	42.4	53.4

CAÑON CITY, COLO.

1886	.....	.....	.....	.....	.....	.....	73.9	72.2	63.6	.....	38.3	39.4	.....
1887	34.8	35.2	47.6	50.7	62.4	71.6	70.5	68.9	62.6	.....	.....	.....	.....
1888	32.4	41.2	40.5	56.3	60.2	76.2	75.4	69.0	66.1	52.1	39.2	39.8	54.0
1889	30.4	35.1	46.4	54.2	60.8	70.0	77.3	75.7	64.3	54.5	33.7	44.4	53.9
1890	33.4	36.8	43.6	52.0	63.0	70.6	75.2	72.2	63.9	.....	.....	.....	.....
Means	32.8	37.1	44.5	53.3	61.6	72.1	74.5	71.6	64.1	53.3	37.1	41.2	53.6

CASTLE ROCK, COLO.

1888	.....	.....	.....	50.3	.....	.....	.....	.....	.....	.....	32.8	29.4	.....
1889	19.6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1890	.....	.....	37.4	47.4	54.8	64.0	71.8	.....	.....	.....	.....	.....	.....
Means	19.6	.....	37.4	48.8	54.8	64.0	71.8	.....	.....	.....	32.8	29.4	.....

CHEYENNE WELLS, COLO.

1889	.....	.....	40.5	50.7	58.8	66.0	.....	.....	.....	54.0	33.4	39.8	.....
1890	27.5	32.9	34.7	50.8	59.0	70.2	78.4	.....	.....	.....	.....	.....	.....
Means	27.5	32.9	37.6	50.8	58.9	68.1	78.4	.....	.....	54.0	33.4	39.8	.....

CLIMAX, COLO.

1887	.....	.....	.....	.....	.....	.....	49.6	51.6	41.4	33.8	21.9	8.4	.....
1888	9.7	15.8	15.0	29.5	30.9	45.0	53.4	47.3	45.6	30.4	19.5	15.3	29.8
1889	7.9	9.6	20.0	31.8	34.5	44.2	54.9	51.8	41.8	34.2	22.4	20.4	31.1
1890	11.4	13.0	17.4	25.9	36.0	44.8	52.6	48.9	41.9	.....	.....	.....	.....
Means	9.7	12.8	17.5	29.1	33.8	44.7	52.6	49.9	42.4	32.8	21.3	14.7	30.1

COLLINS, FORT, COLO.

1872	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	38.9	.....	.....
1873	28.9	28.6	44.0	40.2	51.2	67.0	68.6	69.3	58.0	44.4	39.2	.....	.....
1874	32.1	[26.0]	32.8	36.5	58.5	64.4	71.3	58.3	56.7	52.1	38.9	25.8	[46.1]
1880	31.2	25.6	33.3	47.2	59.0	68.2	71.8	69.9	61.2	47.4	[23.5]	25.2	[47.0]
1881	23.6	31.6	36.7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1882	.....	.....	42.1	46.0	53.0	62.5	72.3	71.5	60.8	46.8	33.9	.....	.....
1883	24.0	14.4	30.0	.....	.....	64.0	.....	68.9	60.2	43.4	39.8	33.3	.....
1884	23.4	28.9	35.0	45.8	58.3	.....	.....	.....	.....	48.7	34.7	.....	.....
1885	26.5	23.7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1886	.....	.....	.....	.....	.....	.....	.....	.....	.....	49.7	29.5	.....	.....
1887	.....	.....	39.6	45.2	56.4	68.1	69.0	64.2	60.3	43.8	35.1	27.4	.....
1888	20.8	36.7	34.3	54.6	54.0	.....	.....	.....	60.2	48.5	32.3	30.1	.....
1889	21.3	25.3	41.1	49.8	53.5	62.3	68.3	69.3	57.3	49.6	32.1	37.1	47.2
1890	24.7	30.0	38.0	46.6	56.1	.....	71.2	66.0	58.3	.....	.....	.....	.....
Means	25.6	27.2	37.0	45.8	55.6	65.4	70.2	67.5	59.3	47.4	34.4	29.8	47.1

***Mean monthly and annual temperature at stations in Colorado*—Continued.**

COLORADO SPRINGS, COLO.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1871	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	30.8	.....
1872	22.5	32.0	35.4	40.1	56.9	63.7	66.5	66.8	55.9	47.0	30.4	25.4	45.2
1873	26.2	28.6	41.9	39.7	51.6	65.5	68.1	66.3	57.6	43.6	39.2	26.9	46.3
1874	30.3	25.5	34.5	38.5	58.6	68.9	73.2	70.3	56.7	49.9	37.9	28.1	47.7
1875	19.1	29.2	30.4	41.6	57.3	67.9	64.6	65.3	57.9	51.3	37.1	35.4	46.4
1876	28.2	34.9	33.5	46.5	54.9	64.0	72.0	.....	.....	.....	.....	.....	.....
1877	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	30.9	27.7	.....
1878	23.9	30.4	[37.5]	47.3	52.5	61.8	70.8	70.2	56.9	47.4	38.1	19.8	[46.4]
1879	23.3	33.6	44.2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1883	23.6	22.5	39.6	44.4	54.1	.....	.....	.....	57.5	44.0	38.1	.....	.....
1884	28.1	26.2	36.4	41.3	49.8	63.3	.....	.....	.....	50.7	36.4	.....	.....
1885	24.5	30.0	38.6	47.5	52.2	.....	.....	.....	.....	.....	39.7	.....	.....
1886	22.0	35.8	34.0	44.7	62.5	64.4	71.8	68.9	59.4	50.6	32.9	33.5	48.4
1887	29.9	31.1	43.4	46.7	57.5	67.0	67.0	66.3	61.1	47.5	38.8	28.5	48.7
1888	26.9	36.1	35.2	51.5	52.4	67.2	70.5	64.9	58.9	46.3	33.1	29.6	47.7
1889	21.0	25.8	39.4	48.4	53.8	62.6	69.8	70.8	58.2	50.0	31.8	40.8	47.7
1890	28.0	32.3	38.6	47.5	55.2	65.1	.....	.....	.....	.....	.....	.....	.....
Means	25.2	30.3	37.5	44.7	55.0	65.1	69.4	67.8	58.0	48.0	35.7	29.7	47.2

CRAWFORD, FORT, COLO.

1889	21.6	28.0	43.5	52.4	56.6	65.2	72.5	71.0	60.4	51.7	34.7	38.0	49.6
1890	27.6	30.6	34.8	45.3	55.4	61.8	70.0	66.0	56.8	.....	.....	.....	.....
Means	24.6	29.3	39.2	48.8	56.0	63.5	71.2	68.5	58.6	51.7	34.7	38.0	48.7

DEER TRAIL, COLO.

1889	.....	.....	39.7	43.8	53.5	63.6	.....	.....	.....	47.0	27.0	34.7	.....
1890	23.3	24.9	33.9	41.6	52.6	65.8	75.0	.....	52.5	.....	.....	.....	.....
Means	23.3	24.9	36.8	42.7	53.0	63.6	.....	.....	.....	47.0	27.0	34.7	.....

DELTA, COLO.

1888	.....	.....	.....	.....	.....	.....	.....	.....	62.5	47.4	33.4	24.7	.....
1889	15.4	24.4	41.7	54.1	61.2	69.2	74.8	71.5	56.8	46.6	27.0	33.8	48.0
1890	28.0	34.6	40.2	50.3	59.8	69.4	76.5	71.3	62.2	.....	.....	.....	.....
Means	21.7	29.5	41.0	52.2	60.5	69.3	75.6	71.4	60.5	47.0	30.2	29.2	49.0

DENVER, COLO.

1870	28.9	32.8	31.8	46.9	60.3	67.1	72.7	67.7	59.2	47.3	41.6	22.4	48.2
1871	33.2	37.4	45.8	49.6	64.1	74.2	77.9	75.0	66.4	52.4	34.7	28.9	53.3
1872	23.7	32.7	36.4	45.0	56.9	66.3	68.3	69.1	59.9	50.5	33.6	28.3	47.6
1873	30.4	31.3	44.0	39.7	52.6	67.9	71.2	70.4	59.7	45.7	41.1	22.8	48.1
1874	31.9	25.6	36.2	42.6	60.9	69.0	75.1	72.3	59.1	52.8	42.4	30.1	49.8
1875	16.8	32.5	33.3	43.9	59.2	69.2	67.8	68.6	61.2	54.4	37.8	38.0	48.6
1876	28.2	37.9	34.7	48.8	56.4	65.5	74.2	69.6	61.5	51.7	37.5	28.3	49.5
1877	24.6	35.1	42.8	43.6	55.9	64.5	73.1	70.3	61.7	46.3	35.2	32.8	48.8
1878	26.7	36.5	45.5	49.3	54.1	63.2	73.3	72.4	58.5	49.9	41.6	22.6	49.5
1879	24.2	36.0	46.0	49.7	61.0	68.1	73.7	69.1	62.4	52.3	38.4	28.8	50.8
1880	35.9	28.3	34.2	47.0	57.0	66.7	69.9	69.0	61.0	47.5	22.0	29.9	47.4
1881	26.1	29.7	37.6	52.5	59.0	71.2	75.3	72.6	59.9	50.3	36.1	39.1	50.8
1882	29.7	37.6	43.2	47.4	52.4	64.9	70.9	71.6	62.7	50.5	37.4	35.4	50.3
1883	28.4	22.0	43.8	45.6	54.2	64.9	71.2	71.2	61.7	46.7	42.9	32.5	48.8
1884	31.5	29.9	39.0	43.5	54.3	67.0	74.2	68.0	64.6	55.5	42.1	24.6	49.5
1885	29.1	32.4	38.5	45.7	52.7	63.8	70.3	68.0	61.9	49.3	42.9	36.2	49.2
1886	20.8	38.6	33.5	44.2	61.0	65.3	73.9	71.0	60.4	52.5	33.2	37.1	49.3

Mean monthly and annual temperature at stations in Colorado—Continued.

DENVER, COLO.—Continued.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1887	31.3	32.0	45.9	48.7	59.5	69.3	69.0	68.9	63.1	48.2	40.4	28.8	50.4
1888	27.3	38.6	33.4	53.2	53.2	68.4	74.2	68.0	62.8	51.0	37.0	37.2	50.4
1889	27.2	29.6	43.3	51.1	55.5	64.3	72.0	72.8	60.0	51.8	32.4	40.5	50.0
1890	28.2	34.0	41.0	48.0	57.7	67.6	.....	.....	.....	.....	.....	.....	.....
Means	27.8	32.9	39.5	47.0	57.0	67.1	72.4	70.3	61.4	50.3	37.5	31.2	49.5

DOLLY VARDEN MINE, COLO.

1888	.....	.....	.....	.....	.....	.....	.....	39.2	.....	23.1	15.8	.....	.....
1889	5.5	5.2	13.4	20.4	25.0	34.4	44.2	42.0	32.9	28.8	[12.0]	[8.5]	[22.7]
Means	5.5	5.2	13.4	20.4	25.0	34.4	44.2	40.6	32.9	26.0	13.9	[8.5]	22.5

DUDLEY, COLO.

1877	16.9	18.3	26.6	25.9	36.3	[44.5]	53.7	51.2	43.7	31.2	21.6	17.3	[32.1]
1878	15.3	18.6	25.9	28.0	37.5	.....	.....	.....	.....	.....	.....	.....	.....
Means	16.1	18.4	26.2	27.0	36.9	44.5	53.7	51.2	43.7	31.2	21.6	17.3	32.3

DURANGO, COLO.

1886	.....	.....	.....	.....	.....	.....	.....	68.8	.....	.....	27.5	30.6	.....
1887	26.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1890	.....	38.0	40.8	47.8	.....	.....	.....	.....	.....	.....	.....	.....	.....
Means	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

FIRST VIEW, COLO.

1889	.....	.....	39.8	49.4	.....	65.8	.....	.....	.....	52.8	33.1	42.1	.....
1890	28.5	30.7	41.8	51.0	60.8	73.0	79.6	72.4	62.9	.....	.....	.....	.....
Means	28.5	30.7	40.8	50.2	60.8	69.4	79.6	72.4	62.9	52.8	33.1	42.1	51.9

FOUNTAIN, COLO.

1871	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	32.2	33.2	.....
1872	26.5	33.7	36.5	48.1	.....	.....	68.4	67.9	57.8	48.0	31.5	26.0	.....
1873	27.0	32.1	43.2	39.2	51.2	.....	71.2	70.2	60.0	47.1	.....	.....	.....
1874	.....	.....	.....	37.8	63.0	71.3	75.9	.....	.....	54.0	40.4	31.0	.....
1875	21.0	30.4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Means	24.8	32.1	39.8	41.7	57.1	71.3	71.8	69.0	58.9	49.7	34.7	30.1	48.4

FRASER, COLO.

1889	.....	.....	.....	37.4	43.9	54.8	56.5	61.8	.....	35.9	12.6	15.8	.....
1890	7.2	12.8	19.4	31.0	.....	.....	.....	.....	.....	.....	.....	.....	.....
Means	7.2	12.8	19.4	34.2	43.9	54.8	56.5	61.8	.....	35.9	12.6	15.8	.....

Mean monthly and annual temperature at stations in Colorado—Continued.

FRUITA, COLO.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1889	.....	.....	.....	.....	.....	.....	.....	.....	.....	52.0	33.9	.....	.....
1890	20.8	33.4	40.8	53.9	66.6	72.2	81.9	75.0	64.2	.....	.....	.....	.....
Means	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

GARLAND, FORT, COLO.

1858	.....	.....	.....	.....	.....	.....	.....	.....	56.2	42.2	28.5	9.7	.....
1859	7.1	24.6	25.6	38.4	51.5	64.4	66.5	61.8	52.0	42.8	32.7	15.2	40.2
1860	16.1	14.4	34.1	42.1	54.2	63.2	66.8	63.5	56.3	45.8	28.8	24.1	42.4
1861	20.7	28.6	35.5	43.6	56.5	66.0	69.5	65.2	56.8	42.3	35.1	31.0	45.9
1862	29.9	25.2	32.5	40.2	55.2	62.8	68.1	66.3	57.4	47.2	30.0	19.9	44.6
1863	16.6	22.3	38.7	48.4	57.2	63.0	66.1	65.7	54.3	39.8	23.9	27.7	43.6
1864	15.7	24.7	28.4	.....	.....	.....	66.1	.....	.....	.....	.....	.....	.....
1866	.....	.....	.....	.....	.....	.....	.....	.....	.....	53.8	45.6	34.2	.....
1867	26.0	26.7	33.6	43.0	54.1	61.7	67.8	67.9	61.6	53.9	46.2	35.0	48.1
1868	19.6	25.4	39.6	42.1	51.3	63.3	68.9	63.6	60.2	48.4	33.5	23.3	44.9
1869	25.0	25.7	40.4	40.8	52.1	61.8	69.0	68.0	56.7	41.9	35.1	11.8	44.0
1870	17.7	27.9	35.1	45.9	56.7	67.1	67.5	66.3	60.1	49.0	41.4	15.7	45.4
1871	19.9	24.0	35.2	41.7	53.8	66.9	68.1	63.9	58.2	41.2	28.3	29.2	44.2
1872	18.4	26.6	32.9	40.9	52.7	60.4	62.8	61.6	50.5	38.2	21.0	18.8	40.4
1873	13.2	15.2	29.4	30.1	45.5	60.8	66.2	63.8	59.2	43.6	32.8	19.9	40.0
1874	19.4	15.3	31.4	34.3	51.1	63.8	68.0	64.2	53.9	44.8	34.6	22.6	42.0
1875	24.2	25.4	27.2	41.3	52.8	61.4	[66.5]	62.8	55.9	48.7	34.5	26.7	[44.0]
1876	22.1	28.9	31.2	44.0	51.5	60.7	67.7	63.6	56.4	44.9	29.0	20.2	43.4
1877	22.9	25.7	40.9	38.3	48.9	60.2	65.4	63.2	53.6	39.8	26.1	18.2	41.9
1878	7.9	17.9	33.9	38.9	.....	.....	.....	64.9	53.3	43.6	31.3	13.9	.....
1879	14.4	24.3	40.8	41.6	55.7	60.7	65.4	[6.35]	54.8	44.6	28.3	23.8	[43.2]
1880	21.7	19.4	30.0	38.9	51.9	62.9	62.7	60.9	52.5	38.5	15.9	20.7	39.7
1881	14.2	23.3	28.8	46.3	51.9	64.0	68.7	64.0	57.4	46.0	23.6	25.0	42.8
1882	18.7	20.6	33.5	40.0	47.9	58.9	62.7	61.4	52.2	43.1	27.9	23.2	40.8
1883	15.5	26.9	38.6	39.5	49.7	61.3	64.5	62.0	52.7	40.7	.....	.....	.....
Means	18.6	23.4	33.8	40.9	52.5	62.3	66.6	64.0	55.7	44.4	31.0	22.2	43.0

GOLDEN CITY, COLO.

1860	.....	.....	.....	.....	61.0	67.6	73.3	74.7	65.8	.....	.....	.....	.....
1871	.....	38.2	42.2	45.0	63.7	75.2	76.8	74.9	.....	.....	.....	.....	.....
1872	.....	.....	.....	.....	.....	66.4	.....	.....	.....	52.2	.....	.....	.....
1873	.....	.....	.....	41.6	53.5	70.4	72.9	72.6	62.4	.....	.....	27.4	.....
1874	32.3	25.0	29.1	37.6	62.6	70.7	79.4	.....	61.1	.....	41.2	.....	.....
1875	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	40.8	.....
1876	29.6	38.4	33.5	48.3	56.2	63.4	75.1	71.2	65.3	55.6	42.6	[35.6]	[51.2]
1877	.....	39.9	48.3	46.4	59.0	66.5	.....	.....	.....	.....	.....	38.8	.....
1883	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	35.4	.....
1884	32.6	29.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Means	31.5	34.3	38.3	43.8	59.3	68.6	75.5	73.4	63.6	53.9	41.9	35.6	51.6

GEORGETOWN, COLO.

1878	.....	.....	.....	.....	.....	.....	.....	.....	.....	43.3	.....	21.3	.....
1879	27.7	31.4	41.4	44.7	54.4	58.4	.....	63.8	.....	.....	.....	.....	.....
1886	.....	.....	.....	.....	.....	.....	.....	63.0	54.6	45.6	28.6	31.9	.....
1887	23.2	26.5	36.2	38.2	49.2	59.2	59.4	57.5	53.8	43.0	37.4	24.4	42.3
1888	25.5	29.7	30.2	43.9	44.9	57.8	62.4	56.9	56.8	42.6	32.4	31.3	42.9
1889	23.8	27.9	35.2	42.4	45.9	53.9	62.4	62.8	52.0	44.7	29.0	34.5	42.9
1890	26.2	28.2	32.6	39.3	48.3	58.5	62.5	58.8	52.7	.....	.....	.....	.....
Means	25.3	28.7	35.1	41.7	48.5	57.6	61.7	61.5	54.0	43.8	31.8	28.7	43.2

Mean monthly and annual temperature at stations in Colorado—Continued.

GLENWOOD SPRINGS, COLO.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1886	.....	.....	.....	.....	64.0	69.4	77.3	74.8	60.5	49.1	29.0	31.4	.....
1887	.....	30.8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1888	.....	.....	.....	52.4	55.0	.....	73.3	69.0	65.8	49.2	36.3	29.7	.....
1889	18.1	25.1	41.9	52.9	53.8	64.5	73.8	71.0	59.3	49.0	28.1	33.3	47.6
1890	24.2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Means	21.2	28.0	41.9	52.6	57.8	67.0	74.8	71.6	61.9	49.1	31.1	31.5	49.0

GRAND JUNCTION, COLO.

1884	.....	.....	.....	48.3	.....	.....	76.8	72.0	63.5	.....	.....	.....	.....
1887	.....	.....	.....	.....	63.1	74.7	76.5	73.4	66.1	49.5	39.4	18.5	.....
1888	18.8	36.6	39.3	54.9	64.1	.....	.....	.....	.....	.....	.....	.....	.....
Means	18.8	36.6	39.3	51.6	63.6	74.7	76.6	72.7	64.8	49.5	39.4	18.5	50.6

GREELEY, COLO.

1887	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	34.8	24.8	.....
1888	18.3	37.2	33.1	.....	.....	.....	72.3	65.8	.....	49.2	34.8	30.6	.....
1889	21.5	27.6	42.4	51.5	57.1	67.3	73.1	73.0	58.8	50.2	33.4	34.9	49.2
1890	22.8	25.8	34.4	46.7	55.6	66.4	.....	.....	.....	.....	.....	.....	.....
Means	20.9	30.2	36.6	49.1	56.4	66.8	72.7	69.4	58.8	49.7	34.3	30.1	47.9

GUNNISON, COLO.

1884	-0.5	12.2	18.5	33.0	.....	.....	.....	.....	.....	.....	.....	.....	.....
1888	.....	.....	.....	.....	.....	.....	.....	56.2	53.7	41.1	25.6	16.5	.....
1889	8.1	15.8	34.3	42.4	45.8	55.8	60.2	58.1	50.5	40.5	20.7	24.7	38.1
1890	4.5	20.6	29.8	38.8	49.1	52.7	.....	.....	53.0	.....	.....	.....	.....
Means	4.0	16.2	27.5	38.1	47.4	54.2	60.2	57.2	52.4	40.8	23.2	20.6	36.8

HERMOSA, COLO.

1875	.....	.....	.....	.....	57.1	64.4	63.4	62.9	59.5	50.1	36.0	26.7	.....
1876	23.6	28.7	32.1	47.8	54.0	66.6	69.2	66.1	56.9	47.8	36.1	26.5	46.3
1877	26.7	34.6	44.3	44.2	52.6	62.5	70.3	67.3	57.3	43.5	33.8	29.6	47.5
1878	19.6	.....	.....	.....	.....	.....	.....	.....	.....	.....	37.8	18.9	.....
1879	21.6	31.7	46.1	49.7	58.5	61.8	68.6	67.6	62.5	48.7	33.1	26.0	48.0
1880	22.8	21.1	32.1	43.6	56.6	65.1	65.9	64.3	58.2	47.7	27.6	25.2	44.2
1881	18.3	29.2	33.3	52.5	58.9	69.4	71.2	68.5	59.8	48.1	34.0	25.5	47.4
1882	.....	.....	.....	46.1	55.0	62.9	69.1	66.5	.....	.....	.....	.....	.....
Means	22.1	29.1	37.6	47.3	56.1	64.7	68.2	66.2	59.0	48.2	34.1	25.5	46.5

HOT SULPHUR SPRINGS, COLO.

1874	.....	.....	.....	.....	.....	66.2	63.3	62.3	50.9	42.7	30.8	15.8	.....
1875	13.0	12.2	.....	34.4	49.6	56.8	60.5	59.8	56.5	42.0	25.5	12.1	.....
1876	1.3	15.6	18.8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Means	7.2	13.9	18.8	34.4	49.6	61.5	61.9	61.0	53.7	42.4	28.2	14.0	37.2

Mean monthly and annual temperature at stations in Colorado—Continued.

HUGO, COLO.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1886	.....	.....	.....	.....	.....	70.3	78.1	75.4	66.7	52.1	30.7	.....	.....
1889	.....	.....	43.9	50.6	58.8	68.8	.....	.....	.....	48.4	33.7	37.6	.....
1890	29.3	40.0	42.6	50.8	59.8	70.2	.....	.....	.....	.....	.....	.....	.....
Means	29.3	40.0	43.2	50.7	59.3	69.6	78.1	75.4	66.7	50.2	32.2	37.8	52.7

HUSTED, COLO.

1886	.....	.....	.....	43.1	58.2	61.3	69.3	.....	.....	48.3	.....	.....	.....
1887	27.2	28.2	39.6	43.6	53.0	63.2	65.4	.....	.....	46.0	.....	.....	.....
1888	23.1	35.4	32.6	48.2	52.4	65.2	70.4	65.0	60.0	48.0	39.0	33.0	47.7
1889	21.5	23.5	41.5	49.2	53.5	61.6	66.8	70.6	58.0	48.4	30.5	40.6	47.1
1890	28.1	32.4	39.1	45.8	54.5	64.2	71.2	66.2	58.6	.....	.....	.....	.....
Means	25.0	29.9	38.2	46.0	54.3	63.1	68.6	67.3	59.0	47.7	34.8	36.8	47.6

HUTCHINSON, COLO.

1875	18.1	21.9	20.7	30.7	47.7	60.6	57.7	58.0	48.7	41.0	28.6	26.8	38.4

IDAHO SPRINGS, COLO.

1886	.....	.....	.....	.....	.....	61.7	68.2	64.2	54.1	45.1	29.8	34.5	.....
1887	26.9	29.2	39.6	42.3	53.3	63.4	62.2	59.8	54.7	43.4	37.9	26.5	44.9
1888	.....	.....	.....	.....	48.7	55.0	64.0	58.1	54.6	42.5	30.9	31.3	.....
1889	23.6	26.2	36.5	44.0	48.6	56.8	57.7	64.1	58.5	[44.5]	32.9	33.5	[43.9]
1890	26.5	33.2	.....	.....	51.9	58.0	.....	.....	.....	.....	.....	.....	.....
Means	25.7	29.5	38.0	43.2	50.6	59.0	63.0	61.6	55.5	43.9	32.9	31.4	44.5

JULESBURG, COLO.

1888	.....	.....	.....	.....	53.8	69.6	75.1	69.0	64.1	47.8	.....	.....	.....
1889	22.8	24.0	40.0	49.7	56.6	66.6	73.1	76.8	59.9	45.5	34.9	[39.8]	[49.1]
1890	.....	.....	.....	52.8	60.2	70.8	79.4	75.0	61.8	.....	.....	.....	.....
Means	22.8	24.0	40.0	51.2	54.1	69.0	75.9	73.6	61.9	46.6	34.9	39.8	47.0

KIT CARSON, COLO.

1889	.....	.....	38.1	49.0	.....	.....	.....	.....	.....	.....	34.8	.....	.....
1890	26.6	37.1	43.5	52.4	65.6	73.6	80.3	78.4	57.6	.....	.....	.....	.....
Means	26.6	37.1	40.8	50.7	65.6	73.6	80.3	78.4	57.6	.....	34.8	.....	.....

LAMAR, COLO.

1889	20.8	31.0	46.9	55.6	63.3	72.4	79.1	79.8	65.2	52.4	39.6	40.4	53.9
1890	33.0	35.0	45.0	52.0	63.8	74.5	82.6	76.7	66.7	.....	.....	.....	.....
Means	26.9	33.0	46.0	53.8	63.6	73.4	80.8	78.2	66.0	52.4	39.6	40.4	54.5

Mean monthly and annual temperature at stations in Colorado—Continued.

LAS ANIMAS, COLO.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1882	[23.5]	33.9	43.2	50.0	56.2	69.5	73.9	72.7	65.3	52.2	33.3	28.6	[50.2]
1883	20.4	22.2	40.5	49.1	59.1	69.1	76.2	73.3	63.5	49.4	39.1	32.7	49.6
1884	23.4	24.5	39.0	46.2	56.3	68.1	75.1	70.4	67.4	56.0	38.4	19.5	48.7
1885	16.4	27.7	40.9	53.2	57.3	70.2	75.2	72.5	63.9	49.6	41.9	33.3	50.2
1886	17.9	37.7	38.7	48.2	65.6	69.6	77.2	74.7	64.7	55.2	32.3	29.6	51.0
1887	27.7	32.5	45.4	51.8	63.0	72.5	75.4	74.1	66.9	51.9	39.1	27.6	52.3
1888	24.6	37.9	37.6	56.7	59.5	.....	.....	.....	.....	.....	.....	.....	.....
1889	.....	.....	.....	.....	.....	.....	.....	64.7	64.7	57.1	29.4	41.9	.....
1890	30.0	34.2	42.8	51.7	62.6	72.2	79.1	74.2	65.1	.....	.....	.....	.....
Means	23.0	31.3	41.0	50.9	60.0	70.2	76.0	72.1	65.2	53.1	36.2	30.5	50.8

LEADVILLE, COLO.

1888	.....	.....	.....	.....	.....	51.8	56.1	51.0	48.2	35.6	25.3	20.4	.....
1889	13.9	16.5	27.1	35.6	38.7	48.0	57.1	54.9	46.0	38.1	23.3	26.0	35.4
1890	14.8	17.2	21.8	26.8	33.8	43.8	54.6	52.2	45.7	.....	.....	.....	.....
Means	14.4	16.8	24.4	31.2	36.2	47.9	55.9	52.7	46.6	36.8	24.3	23.2	34.2

LE ROY, COLO.

1889	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	38.0	.....
1890	.....	.....	39.9	48.5	59.7	65.1	89.8	70.8	62.7	.....	.....	.....	.....
Means	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

LEWIS, FORT, COLO.

1880	15.7	14.1	26.6	.....	43.0	63.0	65.9	62.8	.....	.....	.....	.....	.....
1881	[20.1]	25.2	30.5	48.7	54.7	64.6	70.3	67.2	55.1	45.9	27.1	30.7	[45.4]
1882	23.6	26.4	35.3	41.5	50.6	60.8	69.6	67.0	55.8	47.1	32.1	27.2	44.8
1883	17.7	29.0	38.1	38.9	50.3	62.5	65.5	63.6	56.6	41.2	33.0	28.1	43.7
1884	22.3	23.2	28.7	35.0	48.4	58.6	66.5	60.2	52.9	46.3	35.1	25.6	41.9
1885	17.5	26.7	34.0	40.0	48.9	55.9	65.8	64.1	55.4	47.9	34.7	29.4	43.4
1886	21.4	28.2	27.2	39.6	57.1	61.7	69.7	64.9	55.0	45.3	27.6	30.1	44.0
1887	24.5	25.8	39.4	43.3	53.3	63.3	65.9	62.9	57.2	46.6	36.2	15.9	44.5
1888	20.1	29.3	28.9	45.6	48.8	59.7	66.3	62.0	60.6	46.6	33.4	26.6	44.0
1889	17.8	21.4	34.8	47.2	50.1	59.1	65.8	65.7	53.8	47.4	29.6	31.3	43.7
1890	20.4	27.9	33.3	.....	.....	55.8	72.2	64.2	55.3	.....	.....	.....	.....
Means	20.1	25.2	32.4	42.2	50.5	60.5	67.1	64.0	55.8	46.0	32.1	27.2	43.6

LONGMONT, COLO.

1886	.....	.....	.....	.....	.....	.....	.....	.....	58.9	50.2	27.0	29.0	.....
1887	26.9	29.0	43.4	48.5	60.1	67.6	68.6	61.6	65.5	43.6	32.8	23.5	47.6
1888	19.1	30.5	31.3	53.8	53.2	68.3	72.1	66.3	59.7	49.4	.....	.....	.....
1889	21.0	25.3	40.7	50.5	55.0	62.3	72.2	72.8	56.6	50.0	31.9	39.8	48.2
1890	24.1	.....	.....	49.0	.....	68.0	75.8	69.4	62.4	.....	.....	.....	.....
Means	22.8	28.3	38.5	50.4	56.1	66.6	72.2	67.5	60.6	48.3	30.6	31.0	47.7

LYON, FORT, COLO.

1862	.....	.....	.....	.....	.....	75.2	79.4	75.5	64.1	.....	.....	.....	.....
1863	.....	.....	.....	.....	68.3	.....	.....	.....	.....	.....	.....	.....	.....
1867	31.0	39.1	29.6	54.4	61.4	77.4	80.7	80.2	72.0	56.2	44.6	39.6	55.5
1868	26.8	38.7	46.5	54.0	65.1	76.6	82.8	72.5	55.9	46.8	29.3	21.4	51.4
1869	26.8	24.7	41.0	46.0	59.8	70.4	77.4	78.0	63.7	42.2	35.2	20.8	48.8

Mean monthly and annual temperature at stations in Colorado—Continued.

LYON, FORT, COLO.—Continued.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1870	25.0	33.1	37.1	53.1	67.4	71.8	78.4	72.4	63.6	49.8	44.3	21.7	51.5
1871	32.3	35.6	43.4	53.3	65.3	79.0	81.4	77.2	67.6	57.8	31.3	28.4	54.4
1872	24.4	35.2	39.8	52.6	62.4	72.5	74.5	74.3	65.6	53.0	32.4	24.8	51.0
1873	26.6	31.2	45.4	46.7	58.9	73.4	76.8	77.7	65.5	50.8	40.2	28.6	51.8
1874	27.8	27.0	40.0	43.9	63.7	75.0	82.7	81.1	64.0	56.4	40.3	31.6	52.8
1875	13.0	31.1	41.5	47.8	65.8	75.5	72.3	75.0	66.1	56.6	39.0	36.6	51.7
1876	29.7	37.9	37.8	53.3	62.9	72.2	80.7	77.1	67.6	53.8	33.2	27.3	52.8
1877	15.8	34.2	45.0	48.0	63.2	69.4	78.8	76.7	66.4	49.3	36.1	29.5	51.0
1878	26.3	35.5	46.6	54.8	61.8	69.3	81.7	80.2	65.3	53.5	40.9	17.7	52.8
1879	15.2	33.5	47.3	53.9	68.8	76.3	81.6	76.1	65.1	56.2	39.6	27.9	53.5
1880	32.3	31.5	38.1	53.3	67.4	78.6	76.7	74.7	65.3	50.2	19.6	23.3	50.9
1881	17.5	25.8	41.0	55.9	63.7	79.3	81.9	81.2	[69.0]	[54.0]	33.3	32.9	[53.0]
1882	27.3	34.8	44.5	52.2	59.4	72.7	77.8	76.2	69.1	55.0	36.1	29.4	52.9
1883	21.1	23.1	41.8	51.5	62.0	71.9	[76.5]	75.6	66.1	52.3	41.2	33.0	[51.3]
1884	24.2	26.6	40.8	49.1	59.9	71.3	79.1	73.8	69.5	57.2	40.1	20.4	51.0
1885	17.0	29.3	43.0	57.1	60.9	74.6	79.2	76.8	67.8	51.9	43.1	34.5	52.9
1886	18.3	38.8	40.6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1888	.....	.....	.....	.....	.....	.....	.....	.....	66.5	52.9	37.8	34.9	.....
1889	19.5	28.5	43.5	54.3	60.1	69.0	76.6	77.1	65.4	53.8	.....	.....	.....
Means	23.7	32.2	41.6	51.8	63.2	73.9	78.9	76.6	66.6	52.8	36.9	28.2	52.1

MAGNOLIA, COLO.

1889	.....	.....	42.3	56.0	.....	.....	.....	.....	.....	52.2	29.6	40.4	.....
1890	27.4	29.1	33.2	41.7	52.8	66.4	71.6	69.5	66.7	.....	.....	.....	.....
Means	27.4	29.1	37.8	48.8	52.8	66.4	71.6	69.5	66.7	52.2	29.6	40.4	49.4

MASSACHUSETTS, FORT, COLO.

1852	.....	.....	.....	.....	.....	.....	.....	.....	48.7	40.1	24.4	19.2	.....
1853	20.3	18.8	31.3	45.2	47.7	58.9	62.9	61.6	53.7	41.0	25.7	16.3	[40.3]
1854	.....	.....	.....	.....	49.4	57.5	64.1	62.8	52.7	47.9	29.8	21.4	.....
1855	19.1	25.6	33.2	44.4	51.2	59.0	60.6	62.8	54.0	40.1	27.3	16.2	[41.1]
1856	11.0	17.8	29.4	42.6	52.1	66.5	66.6	62.0	53.0	38.2	23.5	12.7	39.6
1857	18.4	22.3	36.5	40.1	45.5	61.0	66.0	63.7	56.4	42.0	24.1	13.4	40.8
1858	13.3	20.1	30.3	41.2	49.2	61.6	67.9	62.8	.....	.....	.....	.....	.....
Means	16.4	20.9	32.1	42.7	49.2	60.8	64.7	62.6	53.1	41.6	25.8	16.5	40.5

MINNEAPOLIS, COLO.

1887	.....	.....	.....	.....	.....	.....	76.6	76.6	69.6	52.5	38.5	27.1	.....
1888	19.1	32.4	33.7	50.8	56.2	72.1	75.8	.....	.....	.....	.....	.....	.....
Means	19.1	32.4	33.7	50.8	56.2	72.1	76.2	76.6	69.6	52.5	38.5	27.1	50.4

MONTE VISTA, COLO.

1886	.....	.....	.....	.....	.....	.....	.....	64.8	54.1	42.7	24.4	19.1	.....
1887	14.6	22.7	36.6	42.3	[53.9]	60.6	63.9	61.3	56.7	45.7	31.1	14.3	[42.1]
1888	15.1	26.9	30.2	45.6	[55.0]	61.4	65.6	62.3	57.0	42.6	30.2	16.8	[42.4]
1889	10.0	23.4	34.6	35.8	51.9	58.2	66.1	64.2	55.3	45.3	28.6	17.9	40.1
1890	18.0	27.4	33.4	41.4	54.8	61.0	66.5	63.0	54.8	.....	.....	.....	.....
Means	14.4	22.6	33.7	41.3	53.9	60.3	65.5	63.1	55.6	44.1	28.6	17.0	41.6

Mean monthly and annual temperature at stations in Colorado—Continued.

MONTROSE, COLO.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1885	.....	29.9	39.3	45.7	53.7	62.1	69.2	65.8	59.8	48.0	37.3	27.5	.....
1886	23.4	32.4	33.1	43.4	59.8	66.8	73.9	70.1	59.7	48.5	28.7	32.1	47.7
1887	27.5	33.6	43.5	46.3	58.7	69.4	70.4	67.2	60.9	47.9	37.2	20.8	48.6
1888	21.7	34.9	37.3	53.0	55.1	67.8	72.8	66.8	65.0	50.0	36.9	28.6	49.2
1889	20.2	27.5	43.5	52.8	57.2	65.3	73.0	72.1	60.5	52.2	33.2	38.4	49.7
1890	26.6	34.2	39.8	49.4	59.6	66.0	.....	.....	.....	.....	.....	.....	.....
Means	23.9	32.1	39.4	48.4	57.4	66.2	71.9	68.4	61.2	49.3	34.7	29.5	48.5

MORGAN, FORT, COLO.

1866	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	24.2	.....
1867	20.3	33.9	21.1	47.0	58.2	71.0	79.0	79.9	70.6	57.4	44.5	34.4	51.4
1868	19.3	33.5	40.0	47.4	.....	.....	.....	.....	.....	.....	.....	.....	.....
1888	10.4	31.9	28.8	50.6	.....	.....	.....	.....	.....	.....	.....	.....	.....
Means	16.7	33.1	30.0	48.3	58.2	71.0	79.0	79.9	70.6	57.4	44.5	29.3	51.5

PALMER LAKE, COLO.

1887	.....	.....	.....	.....	.....	.....	.....	.....	.....	43.2	36.0	.....	.....
1888	.....	30.2	29.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1889	27.5	27.8	39.6	46.8	49.6	[57.0]	67.4	67.6	55.7	47.9	31.4	37.6	[46.3]
1890	28.4.	29.7	36.0	43.4	52.1	.....	.....	.....	.....	.....	.....	.....	.....
Means	28.0	29.2	35.0	45.1	50.8	57.0	67.4	67.6	55.7	45.6	33.7	37.6	46.1

PANDORA, COLO.

1886	.....	.....	.....	.....	.....	54.5	60.3	57.0	48.5	40.4	22.9	22.6	.....
1887	.....	.....	.....	35.6	46.6	54.2	54.7	.....	.....	39.1	27.7	11.2	.....
1888	19.6	30.4	31.3	42.9	43.0	52.2	61.7	.....	.....	.....	.....	.....	.....
Means	19.6	30.4	31.3	39.2	44.8	53.6	58.9	57.0	48.5	39.8	25.3	16.9	38.3

PAOLI, COLO.

1888	.....	.....	.....	.....	.....	.....	.....	70.9	.....	46.9	32.8	29.6	.....
1889	22.8	24.8	39.8	50.4	56.2	67.1	75.6	74.4	59.7	49.6	31.4	[39.0]	[49.2]
Means	22.8	24.8	39.8	50.4	56.2	67.1	75.6	72.6	59.7	48.2	32.1	34.3	48.6

PIKE'S PEAK, COLO.

1873	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15.8	4.6	.....
1874	6.2	—0.3	4.9	7.8	23.4	34.4	41.6	39.0	29.6	21.6	11.7	7.0	18.9
1875	0.7	0.7	—0.4	11.4	23.3	34.7	35.1	35.7	32.2	25.2	10.7	9.8	18.3
1876	2.5	4.9	4.6	14.9	21.6	30.8	41.7	38.4	31.8	21.5	10.9	4.9	19.0
1877	5.4	7.9	12.0	9.5	18.4	28.1	39.1	39.4	31.1	17.0	5.9	6.7	18.4
1878	1.2	2.4	9.9	12.3	19.8	30.0	41.3	42.4	39.4	20.7	13.3	—0.3	19.4
1879	4.8	6.9	16.0	16.9	25.7	33.2	41.6	39.0	36.1	26.2	12.3	4.1	21.9
1880	6.5	—0.6	5.0	12.7	23.7	36.3	38.2	37.0	30.4	18.3	0.4	6.8	17.9
1881	—0.4	4.8	4.7	18.1	25.4	39.9	43.3	41.0	31.6	23.4	7.2	9.0	20.7
1882	2.3	5.8	8.2	13.5	19.9	30.3	38.3	38.0	29.4	19.8	13.3	6.7	18.8
1883	—1.9	4.4	13.0	12.1	19.5	31.3	39.1	38.8	30.2	16.4	13.8	8.1	18.7
1884	2.4	2.6	4.9	8.5	20.4	30.4	39.8	35.6	32.0	24.4	13.3	5.4	18.3
1885	1.4	1.9	9.3	15.8	21.1	29.8	39.2	37.1	31.0	21.1	13.8	8.8	19.2
1886	2.0	6.2	4.0	12.1	27.1	33.0	42.5	40.5	32.6	22.1	7.1	8.6	19.8
1887	0.4	4.0	14.6	14.7	26.5	36.3	39.1	38.0	33.4	23.9	18.3	2.2	21.0
1888	4.8	7.0	8.2	20.8	21.3	35.1	43.6	37.6	35.4	.....	.....	.....	.....
Means	2.6	3.9	7.9	13.4	22.5	32.9	40.2	38.5	32.4	21.6	11.2	6.2	19.4

Mean monthly and annual temperature at stations in Colorado—Continued.

PUEBLO, COLO.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1886	.....	.....	.....	49.6	67.8	68.8	76.6	72.9	.....	51.9	.....	.....	.....
1887	.....	.....	46.6	52.0	63.1	.....	76.3	70.1	64.5	51.3	.....	27.1	.....
1888	.....	.....	37.2	56.3	58.6	73.9	74.8	69.4	63.3	50.6	34.7	32.6	.....
Means	.....	.....	41.9	52.6	63.2	71.4	75.9	70.8	63.9	51.3	34.7	29.8	.....

RANCH NEAR COMO, COLO.

1885	16.6	21.6	27.7	34.5	40.1	49.5	56.8	54.2	49.1	40.3	30.6	24.3	37.1
1886	18.0	23.9	22.3	32.2	47.5	52.9	59.4	55.9	48.4	37.6	22.5	24.7	37.1
1887	18.0	19.5	30.4	33.2	44.8	54.5	55.8	53.5	49.9	40.3	32.6	17.0	37.5
1888	19.5	22.4	23.3	37.9	38.9	52.4	57.2	51.7	49.7	36.1	26.0	23.2	36.5
1889	16.0	17.4	28.4	37.0	40.9	49.4	57.6	54.8	46.9	38.4	22.0	22.3	35.9
1890	15.2	19.7	23.4	32.4	42.4	49.9	53.6	51.4	44.5	.....	.....	.....	.....
Means	17.2	20.8	25.9	34.5	42.4	51.4	56.7	53.6	48.1	38.5	26.7	22.3	36.5

REYNOLDS, FORT, COLO.

1868	.....	.....	.....	.....	63.2	76.2	79.9	71.5	62.3	52.6	37.1	29.8	.....
1869	30.8	31.1	41.6	48.8	59.8	69.4	76.7	76.7	66.9	50.0	37.8	29.0	51.6
1870	33.7	41.3	41.7	54.7	66.4	71.9	79.7	73.6	64.0	50.3	44.4	22.4	53.7
1871	35.8	38.8	46.0	54.4	68.5	77.8	81.7	78.4	65.7	51.1	34.3	30.5	55.2
1872	25.3	37.3	40.6	54.0	.....	.....	.....	.....	.....	.....	.....	.....	.....
Means	31.4	37.1	42.5	53.0	64.5	73.8	79.5	75.0	64.7	51.0	38.4	27.9	53.2

RIFLE FALLS, COLO.

1889	.....	24.2	37.5	47.6	50.4	59.9	67.4	67.9	54.6	47.1	27.2	32.7	.....
1890	22.0	28.3	.....	41.3	52.9	.....	67.0	.....	.....	.....	.....	.....	.....
Means	22.0	26.2	37.5	44.4	51.6	59.9	67.2	67.9	54.6	47.1	27.2	32.7	44.9

RIVER BEND, COLO.

1889	.....	.....	39.4	47.8	59.9	70.4	.....	.....	.....	.....	33.9	38.9	.....
1890	30.2	33.5	54.9	46.3	57.4	72.1	80.8	69.5	64.1	.....	.....	.....	.....
Means	30.2	33.5	47.2	47.0	58.6	70.4	80.8	69.5	64.1	.....	33.9	38.9	.....

ROCKY FORD, COLO.

1888	.....	.....	.....	.....	.....	.....	.....	.....	.....	56.4	38.5	34.3	.....
1889	19.6	28.5	45.4	55.4	62.6	71.2	74.7	73.2	60.2	54.0	32.6	35.0	51.0
1890	21.4	30.0	38.6	48.9	60.1	71.1	77.3	73.2	63.2	.....	.....	.....	.....
Means	20.5	29.2	42.0	52.2	61.4	71.2	76.0	73.2	61.7	55.2	35.6	34.6	51.1

SAGUACHE, COLO.

1886	.....	.....	.....	.....	.....	.....	.....	.....	56.4	44.9	26.2	24.1	.....
1887	18.9	23.7	38.5	41.5	52.0	62.7	[63.5]	60.5	56.3	45.9	34.9	17.8	[43.0]
1888	16.5	28.4	30.5	46.4	50.2	61.8	65.4	61.2	57.3	44.1	31.0	22.7	43.0
1889	11.0	13.1	36.9	46.8	52.5	58.8	66.6	63.8	54.3	44.5	.....	.....	.....
Means	15.5	21.7	35.3	44.9	51.6	61.1	66.0	61.8	56.1	44.8	30.7	21.5	42.6

Mean monthly and annual temperature at stations in Colorado—Continued.

SAN LUIS EXPERIMENT STATION, COLO.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1889	.....	.....	.....	.....	.....	.....	.....	63.0	56.4	46.8	25.0	31.8	.....
1890	21.1	30.2	36.4	42.8	52.8	58.2	65.6	62.8	55.0	.....	.....	.....	.....
Means	21.1	30.2	36.4	42.8	52.8	58.2	65.6	62.9	55.7	46.8	25.0	31.8	44.1

SEDGWICK, FORT, COLO.

1867	.....	.....	.....	45.3	56.3	69.0	77.3	.....	.....	52.4	47.3	38.9	.....
1868	24.9	33.7	36.7	45.6	59.4	72.6	85.5	73.2	58.6	53.7	37.9	26.8	50.7
1869	27.8	27.6	35.5	43.6	57.7	68.7	74.6	75.5	62.0	43.4	33.3	24.5	47.8
1870	26.0	33.5	31.8	50.5	64.7	73.2	80.8	68.0	61.2	49.0	42.3	24.0	50.4
Means	26.2	31.6	34.7	46.2	59.5	70.9	79.6	72.2	60.6	49.6	40.2	28.6	50.0

SILVERTON, COLO.

1875	.....	.....	.....	.....	.....	.....	.....	.....	48.9	42.4	28.3	16.8	.....
1876	9.4	15.2	18.3	27.3	40.6	50.4	58.6	[53.5]	.....	.....	.....	.....	.....
1886	.....	.....	.....	.....	.....	.....	.....	.....	50.2	39.3	22.6	23.1	.....
1887	16.1	18.7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Means	12.8	17.0	18.3	27.3	40.6	50.4	58.6	53.5	49.6	40.8	25.4	20.0	34.5

SOUTH PUEBLO, COLO.

1872	.....	.....	.....	.....	.....	.....	.....	.....	64.5	51.4	32.6	26.8	.....
1873	30.3	31.1	43.8	45.1	56.0	72.0	73.5	73.5	62.4	48.4	39.0	[29.3]	[50.4]
1874	.....	30.9	.....	45.3	.....	77.3	82.4	.....	63.3	56.6	43.5	32.6	.....
1875	[29.8]	33.8	36.9	49.8	64.2	76.0	73.2	74.3	65.0	55.0	40.4	36.5	[52.9]
1876	31.1	39.6	40.4	.....	63.8	74.8	.....	.....	65.9	53.3	38.2	27.3	.....
1877	30.0	37.7	46.4	47.6	61.1	70.2	76.7	75.7	65.3	49.5	35.6	32.3	52.3
1878	28.0	38.6	45.7	55.4	61.0	69.0	80.6	78.2	64.6	54.2	43.0	20.1	53.2
Means	29.8	35.3	42.6	48.6	61.2	73.2	77.3	75.4	64.4	52.6	38.9	29.3	52.4

SUMMIT, COLO.

1876	.....	.....	.....	.....	.....	.....	.....	49.3	43.1	33.4	25.6	18.0	.....
1877	19.6	19.6	22.3	23.1	31.7	45.4	52.8	51.5	43.0	27.5	13.7	10.3	30.0
1878	6.3	6.0	17.1	22.9	31.5	40.8	49.4	49.3	35.7	26.7	18.0	7.9	26.0
1879	10.7	18.2	27.1	32.1	41.2	42.6	48.7	44.3	39.0	.....	.....	.....	.....
1880	.....	.....	.....	.....	.....	41.4	44.8	.....	36.0	24.8	.....	.....	.....
Means	12.2	14.6	22.2	26.0	34.8	42.6	48.9	48.6	39.4	28.1	19.1	12.1	29.0

THON, COLO.

1888	.....	.....	33.8	49.9	49.8	66.6	70.8	64.2	46.2	45.4	31.9	.....	.....
1889	18.6	26.2	38.7	47.5	51.2	60.6	69.7	69.2	57.5	48.2	28.0	37.6	46.1
1890	27.4	30.2	37.4	46.8	54.0	62.8	72.0	68.0	59.6	.....	.....	.....	.....
Means	23.0	28.2	36.6	48.1	51.7	63.3	70.3	67.1	54.4	46.8	30.0	37.6	46.5

TRINIDAD, COLO.

1886	.....	.....	.....	.....	63.9	67.0	72.8	68.9	.....	.....	34.3	34.0	.....
1887	30.7	35.1	43.7	46.8	57.3	63.0	67.7	66.0	61.9	51.4	44.1	32.0	50.0
1888	32.4	36.2	36.7	55.2	60.6	.....	.....	.....	.....	.....	.....	.....	.....
Means	31.6	35.6	40.2	51.0	60.6	65.0	70.2	67.4	61.9	51.4	39.2	33.0	50.6

Mean monthly and annual temperature at stations in Colorado—Continued.

T. S. RANCH, COLO.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1887	[25.0]	33.6	45.9	47.8	61.1	72.8	73.3	68.6	65.6	53.2	42.0	23.9	[51.1]
1888	22.6	36.2	37.8	54.6	58.2	71.8	75.8	69.3	66.5	50.8	38.2	28.6	50.9
1889	23.0	28.6	44.6	54.8	60.0	70.2	77.6	74.9	62.0	52.8	34.7	36.8	51.7
1890	27.8	34.1	39.3	51.3	62.6	68.8	77.4	72.2	63.9	.....	.....	.....	.....
Means	24.6	33.1	41.9	52.1	60.5	70.9	76.0	71.2	64.5	52.3	38.3	29.8	51.3

WALDEN, COLO.

1887	.....	.....	.....	.....	.....	.....	.....	60.1	54.4	40.7	35.3	18.5	.....
1888	16.5	25.4	24.6	42.6	45.0	57.7	63.5	57.4	54.5	41.8	.....	.....	.....
1889	13.1	21.6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Means	14.8	23.5	24.6	42.6	45.0	57.7	63.5	58.8	54.4	41.2	35.3	18.5	40.0

WATKINS, COLO.

1889	.....	.....	42.6	49.5	.....	.....	.....	.....	.....	.....	28.3	40.1	.....
1890	29.7	31.8	40.6	49.7	59.9	72.3	81.4	70.6	66.3	47.7	.....	.....	.....
Means	29.7	31.8	41.6	49.6	59.9	72.3	81.4	70.6	66.3	47.7	28.3	40.1	51.6

WESTCLIFFE, COLO.

1886	.....	.....	.....	41.5	55.7	60.6	.....	.....	55.4	47.1	27.9	28.7	.....
1887	25.1	29.6	38.4	.....	.....	.....	58.4	58.2	51.0	.....	.....	.....	.....
1889	.....	.....	.....	.....	.....	.....	.....	.....	.....	43.6	23.5	38.8	.....
1890	27.3	29.0	34.2	40.1	47.3	57.8	61.5	57.4	50.6	.....	.....	.....	.....
Means	26.2	29.3	36.3	40.8	51.5	59.2	60.0	56.8	52.3	45.4	25.7	33.8	43.1

WISE, FORT, COLO.

1860	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	25.9	.....
1861	24.2	39.0	44.5	53.5	66.0	77.7	79.0	77.6	66.4	50.4	42.1	33.4	54.5
1862	22.2	27.3	39.5	47.4	65.2	.....	.....	.....	.....	.....	.....	.....	.....
Means	23.2	33.2	42.0	50.4	65.6	77.7	79.0	77.6	66.4	50.4	42.1	29.6	53.1

APPENDIX No. 55.

METEOROLOGICAL OBSERVATIONS MADE IN THE TERRITORY OF UTAH.

Class.	County and station.	Latitude.	Longitude.	Elevation above sea level.	Record.			T. or R. missing.	Remarks.
					Length.	From—	To (inclusive)—		
	Box Elder.	° ′	° ′	*Feet.*	*Yrs. Mo.*				
R. R ..	Blue Creek	41 39	112 28	4,379	13 3*	July, 1877	Sept., 1890	.....	Pacific Rwy. system.
R. R ..	Corinne	41 30	112 18	4,232	20 8	Feb., 1870	....do	.....	Pacific Rwy system Signal Service from Feb., 1871, to Feb., 1874.
R. R ..	Kelton	41 45	113 08	4,222	12 7	Mar., 1878	....do	.....	Pacific Rwy system.
R. R ..	Promontory	41 35	112 35	.....	20 7	Jan., 1870	Aug., 1890	.....	Do.
R. R ..	Terrace	41 30	113 30	4,548	16 8*	Feb., 1870	Sept., 1890	.....	Do.
	Weber.								
R. R ..	Ogden	41 12	111 57	4,340	20 8	Feb., 1870	....do	.....	Pacific Rwy system. W. W. Crossman from Aug., 1889, to Sept., 1890.
	Summit.								
V. O...	Coalville	40 56	111 28	5,630	11 7*	Mar., 1869	June, 1883	R.	Thomas Bullock.
V. O...	St. Mary's	40 42	111 00	6,200	2 0*	June, 1865	Aug., 1867	R.	Do.
V. O...	Wanship	40 49	111 24	6,200	3 4	June, 1866	Dec., 1874	.....	Do.
V. O...	Park City	40 39	111 31	.....	0 10	Aug., 1889	May, 1890	.....	Bell Telephone Co.
	Tooele.								
S. S ...	Deep Creek	40 32	112 18	.....	3 1	Sept., 1877	Sept., 1880	.....	Signal Service.
V. O...	Stockton	40 35	112 23	.....	0 10	Aug., 1889	May, 1890	.....	Bell Telephone Co.
	Uintah.								
S. S ...	Fort Duchesne	40 35	109 50	4,941	2 7	Dec., 1887	June, 1890	.....	Signal Service. U. S. post hospital from Jan., 1889, to Sept., 1890.
	Salt Lake.								
V. O...	Bingham Cañon	40 32	112 08	.....	0 7	Aug., 1889	Feb., 1890	.....	Bell Telephone Co.
M. D ..	Camp Douglas	40 46	111 50	4,800	22 1*	Dec., 1862	Sept., 1890	.....	U. S. post hospital.
S. S...	Salt Lake City	40 46	111 54	4,354	26 11	Jan., 1850	June, 1890	.....	Signal Service from Apr., 1874, to June, 1890. Thomas Bullock and others.
	Utah.								
M. D ..	Camp Floyd	40 16	112 08	4,725	3 1	July, 1858	July, 1861	.....	U. S. post hospital.
V. O...	Provo City	40 14	111 42	.....	0 10	Aug., 1889	May, 1890	.....	Bell Telephone Co.
	Juab.								
V. O...	Levan	39 34	111 53	.....	1 5	Apr., 1889	Sept., 1890	.....	A. B. Larson.
V. O...	Nephi	39 42	111 49	5,550	3 9*	Mar., 1883	....do	.....	J. G. Bardsley, W. R. May.
	San Pete.								
V. O...	Mount Pleasant	39 33	111 30	6,300	1 8	July, 1889	....do	.....	H. C. Davidson.
	Emery.								
V. O...	Moab	38 36	109 29	.....	1 2	Aug., 1889	....do	.....	Henry Crouse.
S. S ...	Price	39 38	110 42	.....	1 9	Jan., 1889	....do	T.	Signal Service

*Record broken.

Meteorological observations made in the Territory of Utah.

Class.	County and station.	Latitude.	Longitude.	Elevation above sea level.	Record.			T. or R. missing.	Remarks.
					Length.	From—	To (inclusive)—		
	Millard.	° ′	° ′	*Feet.*	*Ys. Mo.*				
S. S ...	Fillmore	38 58	112 18	.....	3 0	Aug., 1877	Aug., 1880	.....	Signal Service.
	Sevier.								
V. O...	Richfield	38 47	112 08	.....	0 11	Aug., 1889	Sept., 1890	.....	Neils Anderson.
	Beaver.								
V. O...	Beaver	38 18	112 38	6,170	1 5	May, 1889	....do	.....	Rev. J. D. Gillilan.
S. S ...	Frisco	38 25	113 16	6,400	2 6	July, 1885	Dec., 1887	.....	Signal Service.
	Garfield.								
V. O...	Losee	37 40	112 02	.....	1 5	May, 1889	Sept., 1890	.....	E. Caffall.
	Washington.								
V. O...	Harrisburg	37 16	113 23	2,375	2 2*	Feb., 1869	Feb., 1872	T.	James Lewis.
S. S ...	St. George	37 09	113 35	.....	9 6*	Jan., 1961	Sept., 1890	.....	Signal Service from Aug., 1877, to Sept., 1880. John and Seth A. Pymm and others.
	Kane.								
V. O...	Kanab	37 03	112 32	5,500	5 0	May, 1872	Oct., 1879	T.	James Lewis.
V. O ..	Mt. Carmel	37 17	112 41	5,215	4 4	Jan., 1874	Sept., 1890	.....	Closed from Aug., 1878, to July, 1889. R. M. Engelstad, Robert Moncur.

*Record broken.

APPENDIX No. 56.

MONTHLY AND ANNUAL PRECIPITATION AT STATIONS IN UTAH.

Interpolated values are given in brackets [ ]. Capital T indicates a trace of precipitation.

BEAVER, UTAH.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1889	.....	.....	.....	.....	1.20	0.86	0.38	1.93	0.40	1.62	0.14	3.79	.....
1890	1.03	0.67	0.53	0.60	0.12	T	0.51	0.44	1.22	.....	.....	.....	.....
Means	1.03	0.67	0.53	0.60	0.66	0.43	0.44	1.18	0.81	1.62	0.14	3.79	11.90

BLUE CREEK, UTAH.

1877	.....	.....	.....	.....	.....	.....	T	T	0.00	0.12	0.55	0.15	.....
1878	0.20	0.72	1.06	0.43	1.98	0.58	0.10	0 94	1.80	1.15	0.20	0.00	9.16
1879	1.15	0.29	0.20	0.64	T	1.30	0.00	0.03	0.65	1.94	0.21	1.87	8.28
1880	0.00	0.30	0.00	1.49	0.76	0.00	1.09	0.00	0.21	0.44	0.10	2.54	6.93
1881	1.83	1.70	0.50	0.89	2.71	0.00	0.40	1.47	0.29	1.62	0.05	0.40	11.86
1882	0.45	0.92	0.75	2.54	0.65	0.70	0.90	0.74	0.90	1.98	0.00	0.50	11.03
1883	0.35	0.01	0.02	0.02	0.00	0.00	0.30	0.40	0.50	0.70	0.94	0.00	3.24
1884	1.13	0.70	1.52	2.16	1.01	0.52	0.00	0.00	1.80	0.50	0.10	2.50	11.94
1885	0.65	1.52	0.05	1.07	1.27	1.73	0.00	1.19	0.07	0.05	1.87	0.79	10.26
1886	1.16	0.35	1.05	0.80	0.05	0.70	0.88	0.55	0.91	0.85	1.05	0.28	8.63
1887	0.75	0.78	0.30	0.65	0.05	0.10	0.10	0.00	0.40	0.00	0.30	0.70	4.13
1888	2.10	0.15	0.55	0.45	0.10	0.05	0.25	0.05	0.00	0.20	[0.30]	0.95	[5.15]
1889	0.25	0.00	1.15	0.50	1.35	0.00	0.00	0.60	0.35	1.85	0.60	2.40	9.05
1890	2.00	0.85	1.80	1.20	0.95	0.40	0.34	0.80	T	.....	.....	.....	.....
Means	0.92	0.64	0.69	0.99	0.84	0.47	0.31	0.48	0.56	0.88	0.48	1.01	8.27

COALVILLE, UTAH.

1874	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3.75	.....
1875	6.90	3.65	1.30	T	1.25	0.80	0.00	0.00	0.05	0.30	4.92	1.85	21.02
1876	3.10	2.25	2.68	0.82	1.55	0.00	1.50	0.60	0.40	[1.50]	0.30	1.00	[15.70]
1877	1.65	0.20	3.00	1.00	2.21	0.55	0.00	0.00	0.04	1.65	1.00	0.45	11.75
1878	0.30	1.85	0.90	2.51	0.30	0.90	0.95	0.80	0.98	1.02	0.00	0.20	10.71
1879	1.70	0.65	[1.23]	[1.25]	0.25	0.00	0.00	[0.70]	[0.40]	1.30	0.72	1.78	[9.98]
1880	0.82	2.45	0.72	1.90	1.75	0.10	0.00	0.50	0.00	[1.50]	2.20	0.98	[12.92]
1881	0.40	0.10	0.35	1.42	1.45	1.50	1.00	1.90	0.55	0.50	[1.50]	[1.40]	[12.07]
1882	0.50	0.92	0.12	[1.25]	[1.11]	2.40	0.06	0.90	0.60	4.61	[1.50]	[1.40]	[15.37]
1883	.....	.....	0.80	[1.25]	0.09	0.11	.....	.....	.....	.....	.....	.....	.....
Means	1.92	1.51	1.23	1.27	1.11	0.71	0.44	0.68	0.38	1.55	1.52	1.42	13.74

CORINNE, UTAH.

1870	.....	1.35	0.66	0.52	0.14	0.00	0.00	.....	0.00	0.00	0.00	1.10	.....
1871	0.52	0.60	1.28	0.83	1.79	0.02	0.99	0.20	0.41	0.40	2.87	4.47	14.38
1872	0.70	1.38	0.64	1.43	2.65	0.30	0.11	T	0.00	0.17	0.16	3.38	10.92
1873	1.63	3.65	0.52	0.75	3.45	0.12	0.14	1.75	0.43	1.23	0.18	2.35	16.20
1874	0.82	0.99	1.75	0.00	0.00	0.00	2.50	0.00	0.00	1.50	4.00	0.45	12.01
1875	1.40	0.30	1.08	2.05	0.60	1.00	0.50	0.80	0.50	0.75	5.45	[2.60]	[17.03]
1876	1.32	0.58	0.82	0.90	1.51	0.00	2.13	0.00	0.35	1.20	0.00	0.85	9.66
1877	1.66	0.00	0.20	0.15	1.50	0.15	0.00	0.00	0.10	0.50	0.40	0.75	5.41

Monthly and annual precipitation at stations in Utah—Continued.

CORINNE, UTAH—Continued.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1878	0.82	2.10	0.98	0.98	1.15	0.50	0.00	0.31	1.25	0.75	0.00	0.00	8.84
1879	1.18	0.17	0.20	1.35	0.00	0.80	0.00	0.00	0.20	0.75	0.75	2.10	7.50
1880	0.20	0.30	0.65	1.50	0.55	0.00	0.67	0.10	0.25	0.70	0.40	2.70	8.02
1881	2.15	2.15	0.95	1.45	2.15	0.00	0.02	0.95	0.37	1.80	0.70	0.25	12.94
1882	1.20	2.40	0.30	1.45	0.05	0.75	0.00	0.10	0.77	1.17	0.15	0.40	8.74
1883	1.00	0.80	1.25	1.00	0.95	0.33	0.48	0.20	0.00	1.95	1.25	0.80	10.01
1884	0.55	1.90	3.80	2.10	1.75	0.70	0.20	0.30	2.90	1.05	0.05	3.65	18.95
1885	1.65	2.00	0.10	2.50	1.15	2.75	0.00	1.51	0.15	0.15	3.09	1.49	16.54
1886	0.98	1.50	2.25	0.75	0.00	0.60	0.65	0.15	1.75	1.50	1.40	0.25	11.78
1887	0.88	1.35	0.70	1.70	0.35	0.30	0.35	0.25	0.15	0.00	0.18	1.10	7.31
1888	2.70	0.75	1.35	1.10	0.30	0.40	0.90	0.10	0.95	0.80	0.65	1.90	11.90
1889	0.65	0.05	1.70	1.25	1.30	0.00	0.00	0.45	0.40	3.25	0.98	4.53	14.56
1890	4.00	1.55	1.70	1.15	1.10	0.00	0.05	0.20	0.10	.....	.....	.....	.....
Means	1.30	1.23	1.09	1.19	1.07	0.42	0.46	0.37	0.53	0.98	1.18	1.76	11.58

DEEP CREEK, UTAH.

1877	.....	.....	.....	.....	.....	.....	.....	.....	0.50	0.70	0.00	0.55	.....
1878	0.80	3.15	0.07	0.76	1.06	0.82	0.14	[0.80]	0.38	0.17	0.23	0.05	[8.43]
1879	0.43	0.00	T	0.09	T	0.15	0.00	0.00	T	0.19	0.40	0.16	1.42
1880	0.02	0.15	0.12	1.23	.....	.....	.....	0.51	0.22	.....	.....	.....	.....
Means	0.42	1.10	0.06	0.69	0.53	0.48	0.07	0.44	0.28	0.35	0.21	0.25	4.88

DOUGLAS, CAMP, UTAH.

1863	0.19	0.53	0.39	2.80	0.11	0.00	0.10	0.00	0.35	0.00	0.10	2.16	6.73
1864	1.20	0.10	1.20	0.81	1.61	0.01	0.00	0.08	1.02	[1.60]	1.00	3.70	[12.33]
1865	1.25	2.50	1.11	0.05	0.20	0.45	1.11	0.10	1.40	3.20	0.45	5.10	16.92
1866	2.55	1.26	2.08	2.59	2.06	.....	.....	.....	0.40	0.67	0.58	3.31	.....
1867	4.51	0.84	4.94	1.00	2.46	1.40	0.58	0.89	1.16	1.50	4.10	4.62	28.00
1868	3.14	0.64	1.50	2.22	5.00	1.04	1.36	0.20	1.11	0.06	0.03	0.76	17.06
1869	3.36	0.47	1.31	3.58	5.48	0.22	0.55	0.75	1.55	0.75	1.85	[2.40]	[22.27]
1870	1.53	1.44	4.57	3.40	2.10	0.73	1.48	0.45	0.45	0.85	1.39	1.85	20.24
1871	1.60	2.44	3.39	3.15	5.00	0.30	1.38	T	T	0.55	1.83	0.95	20.59
1872	1.30	1.34	1.20	2.04	2.34	1.16	0.02	0.72	0.69	1.36	0.66	2.26	15.09
1873	2.18	1.89	0.90	2.00	4.10	0.24	0.12	0.94	0.42	0.84	0.38	1.20	15.21
1874	1.28	1.03	2.87	0.74	2.89	0.72	2.12	2.11	0.30	1.89	2.26	1.06	19.27
1875	2.21	0.80	2.37	0.05	2.61	1.10	0.64	T	1.15	1.14	4.54	2.78	19.39
1876	1.22	0.90	4.10	1.79	3.70	0.14	2.16	0.32	0.20	2.80	0.52	1.50	19.35
1877	1.10	0.40	2.44	1.36	3.42	1.22	0.18	0.18	0.42	2.06	0.54	1.56	14.88
1878	0.80	3.18	2.04	2.28	2.02	[0.35]	1.38	0.82	2.64	1.42	0.74	0.28	[17.95]
1879	1.98	0.90	0.70	3.70	T	0.94	0.06	0.18	T	2.08	0.66	4.54	15.74
1880	0.52	1.30	0.42	2.64	2.34	0.22	0.30	0.74	0.84	0.62	1.04	2.88	13.86
1881	1.58	3.02	1.62	1.22	[2.50]	0.16	0.40	1.38	0.50	2.40	2.12	1.24	[18.14]
1882	1.40	1.20	1.76	2.64	1.28	1.40	0.70	1.62	[0.40]	3.60	[0.50]	1.90	[18.40]
1883	3.00	1.30	1.50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1889	0.82	0.91	1.38	2.57	2.41	T	T	0.87	0.52	3.81	1.00	4.37	18.66
1890	3.07	2.05	1.12	0.94	0.16	0.43	0.05	1.83	0.04	.....	.....	.....	.....
Means	1.82	1.32	1.95	1.98	2.44	0.58	0.70	0.68	0.71	1.58	1.25	2.40	17.41

DU CHESNE, FORT, UTAH.

1887	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.48	.....
1888	0.41	0.61	0.22	1.05	0.69	0.00	0.69	1.09	0.37	0.15	0.26	0.92	6.46
1889	0.35	0.18	0.32	0.68	0.73	0.15	0.49	0.56	0.34	0.66	0.05	1.77	6.28
1890	1.01	2.05	0.02	0.21	0.00	0.00	1.35	0.85	0.32	.....	.....	.....	.....
Means	0.59	0.95	0.19	0.65	0.47	0.05	0.84	0.83	0.34	0.40	0.16	1.06	6.53

Monthly and annual precipitation at stations in Utah—Continued.

FILLMORE, UTAH.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1877	.....	.....	.....	.....	.....	.....	.....	0.00	0.00	0.00	0.92	0.40	.....
1878	1.29	1.88	1.00	1.19	1.03	0.83	1.27	1.62	2.02	0.26	0.29	0.63	13.31
1879	1.82	1.23	0.15	1.69	0.31	0.10	0.00	1.02	0.00	0.00	0.50	3.00	9.82
1880	2.25	2.75	2.75	5.00	[0.70]	0.02	0.66	0.50	.....	.....	.....	.....	.....
Means	1.79	1.95	1.30	2.63	0.68	0.32	0.64	0.78	0.67	0.09	0.57	1.34	12.76

FLOYD, CAMP, UTAH.

1858	.....	.....	.....	.....	.....	.....	0.00	0.43	0.18	1.78	0.50	0.15	.....
1859	0.35	1.14	0.28	0.40	1.24	0.00	2.67	0.18	1.72	0.00	3.11	0.19	11.28
1860	0.20	0.12	0.72	0.80	0.06	0.39	1.54	0.40	0.17	0.20	0.09	0.14	4.83
1861	1.05	0.03	1.54	0.77	0.41	0.15	0.08	.....	.....	.....	.....	.....	.....
Means	0.53	0.43	0.85	0.66	0.57	0.18	1.07	0.34	0.69	0.66	1.23	0.16	7.37

FRISCO, UTAH.

1885	.....	.....	.....	.....	.....	.....	0.15	3.96	0.07	0.46	0.97	0.15	.....
1886	0.54	0.19	0.28	0.15	T	T	1.35	3.52	0.11	0.66	1.23	0.05	8.08
1887	0.15	0.86	0.46	1.53	0.19	0.02	1.34	0.54	0.28	0.58	0.39	0.76	7.10
Means	0.34	0.52	0.37	0.84	0.10	0.01	0.95	2.67	0.15	0.57	0.86	0.32	7.70

HARRISBURG, UTAH.

1869	.....	0.95	1.30	0.10	2.15	0.10	0.90	0.80	.....	0.10	0.70	0.01	.....
1870	0.15	3.80	2.10	0.60	2.25	.....	3.60	.....	.....	.....	.....	.....	.....
1871	.....	2.50	0.10	2.10	.....	.....	3.50	0.50	0.30	.....	3.15	0.10	.....
1872	0.05	4.50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Means	0.10	2.94	1.17	0.93	2.20	0.10	2.67	0.65	0.30	0.10	1.92	0.06	13.14

KANAB, UTAH.

1872	.....	.....	.....	.....	1.80	2.10	.....	.....	.....	.....	0.50	6.50	.....
1873	.....	1.80	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1874	.....	.....	.....	.....	.....	.....	3.10	1.30	.....	1.00	1.90	0.70	.....
1875	3.30	0.30	0.30	0.06	0.10	.....	0.80	.....	0.10	.....	3.20	1.30	.....
1876	2.20	1.40	1.75	1.30	.....	.....	1.50	0.50	1.25	4.40	0.30	.....	.....
1877	0.90	3.00	0.20	0.70	0.22	.....	0.90	0.20	0.10	0.26	.....	0.80	.....
1878	0.95	3.55	.....	0.80	.....	0.20	0.30	0.50	.....	0.20	0.30	.....	.....
1879	.....	0.05	.....	0.10	.....	.....	.....	.....	.....	.....	.....	.....	.....
Means	1.84	1.68	0.75	0.59	0.71	1.15	1.32	0.62	0.48	1.46	1.24	2.32	14.16

KELTON, UTAH.

1878	.....	.....	0.15	0.60	1.28	0.57	2.08	0.14	0.53	0.35	0.00	0.00	.....
1879	0.35	0.19	0.08	0.65	0.00	0.32	0.00	0.00	0.27	0.14	0.65	1.42	4.07
1880	0.08	0.10	0.15	0.65	0.00	0.00	0.00	0.00	0.08	0.20	0.05	0.90	2.21
1881	0.80	1.98	0.00	1.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.90	4.69
1882	1.00	1.80	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22	3.12
1883	0.42	0.05	0.20	1.40	0.10	0.00	0.50	0.10	0.00	0.41	0.41	0.16	3.75
1884	0.05	0.72	2.20	1.80	0.81	0.35	0.15	0.34	1.97	1.70	0.00	3.35	13.44
1885	0.50	0.75	0.02	1.00	0.55	0.80	0.00	1.54	0.10	T	[1.00]	0.25	[6.51]
1886	1.13	0.76	0.20	0.38	0.08	1.42	0.22	0.44	0.35	0.58	1.25	0.32	7.13
1887	0.04	0.48	0.03	1.57	0.00	0.33	1.32	0.25	0.10	0.00	0.40	0.60	5.12

Monthly and annual precipitation at stations in Utah—Continued.

KELTON, UTAH.—Continued.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1888	1.50	0.00	0.70	0.30	0.20	1.13	0.33	0.30	0.38	0.27	0.45	1.39	6.95
1889	0.22	0.00	1.26	0.92	1.23	0.20	0.00	0.00	0.00	0.57	0.11	2.72	7.23
1890	2.50	0.65	0.80	0.95	0.65	0.15	0.00	0.10	0.20	.....	.....	.....	.....
Means	0.72	0.62	0.45	0.87	0.38	0.41	0.36	0.25	0.31	0.35	0.36	1.02	6.10

LEVAN, UTAH.

1889	.....	.....	.....	.....	T	0.90	0.00	1.18	0.92	2.48	1.34	4.20	.....
1890	2.20	1.15	1.45	0.25	0.48	0.10	0.40	0.45	0.28	.....	.....	.....	.....
Means	2.20	1.15	1.45	0.25	0.24	0.50	0.20	0.82	0.60	2.48	1.34	4.20	15.43

LOSEE, UTAH.

1889	.....	.....	.....	.....	0.35	0.15	5.25	2.42	0.40	1.10	T	8.50	.....
1890	1.10	2.40	0.55	1.10	0.40	0.00	3.30	1.20	1.50	.....	.....	.....	.....
Means	1.10	2.40	0.55	1.10	0.38	0.08	4.28	1.81	0.95	1.10	T	8.50	22.25

MOAB, UTAH.

1889	.....	.....	.....	.....	.....	.....	.....	0.45	0.02	0.80	0.33	2.83	.....
1890	0.58	1.28	0.68	0.29	T	T	0.10	0.61	0.26	.....	.....	.....	.....
Means	0.58	1.28	0.68	0.29	T	T	0.10	0.53	0.14	0.80	0.33	2.83	7.56

MOUNT CARMEL, UTAH.*

1874	3.80	3.10	6.50	1.10	5.75	0.00	3.25	4.25	0.25	2.75	4.50	1.40	36.65
1876	8.89	0.70	1.30	0.05	0.20	[0.02]	[0.88]	1.00	1.50	18.75†	0.00	0.00	[33.29]
1877	.....	4.00	10.00	1.55	4.75	0.00	0.00	0.00	0.00	0.20	.....	.....	.....
1878	3.00	11.90	3.88	1.25	0.10	0.08	0.00	.....	.....	.....	.....	.....	.....
1889	.....	.....	.....	.....	.....	.....	.....	1.86	0.34	2.41	0.78	6.94	.....
1890	2.25	1.94	1.33	0.73	0.27	T	0.27	0.94	1.30	.....	.....	.....	.....
Means	4.48	2.33	4.60	0.94	2.21	0.02	0.88	1.61	0.68	6.03	1.76	2.78	28.32

* Record 1874–78 not reliable.

MOUNT PLEASANT, UTAH.

1889	.....	.....	.....	.....	.....	.....	0.81	0.55	0.55	1.35	0.76	3.55	.....
1890	[2.00]	3.46	2.30	0.00	0.53	0.26	0.90	0.52	0.05	.....	.....	.....	.....
Means	2.00	3.46	2.30	0.00	0.53	0.26	0.86	0.54	0.30	1.35	0.76	3.55	15.91

NEPHI, UTAH.

1883	.....	.....	1.27	3.05	1.10	0.10	1.40	0.70	0.15	2.25	1.70	1.98	.....
1884	0.86	3.70	2.15	6.30	2.70	0.50	0.25	0.35	1.70	2.05	0.00	5.40	25.96
1885	0.52	2.17	0.45	4.19	2.09	1.67	0.02	2.65	.....	.....	.....	.....	.....
1889	.....	.....	.....	.....	0.50	0.09	0.76	1.96	0.40	1.72	0.28	2.35	.....
1890	1.54	0.63	0.83	0.67	0.67	0.17	0.55	0.42	0.45	.....	.....	.....	.....
Means	0.97	2.17	1.18	3.55	1.41	0.51	0.60	1.22	0.67	2.01	0.66	3.24	18.19

Monthly and annual precipitation at stations in Utah—Continued.

OGDEN, UTAH.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1870	.....	0.38	1.08	2.08	.....	0.05	0.00	1.08	0.00	0.00	0.00	0.57	.....
1871	0.65	1.33	0.77	1.50	1.96	0.00	0.05	0.00	0.00	0.20	1.93	2.60	10.99
1872	0.70	0.00	0.35	1.70	0.21	0.11	0.00	0.05	0.00	0.05	0.22	3.15	6.54
1873	1.62	3.35	0.22	0.90	4.44	0.50	T	[1.00]	0.15	1.85	0.30	1.40	[15.73]
1874	0.70	1.00	1.50	0.33	3.25	0.10	1.17	0.40	0.00	1.84	1.50	[0.50]	[12.29]
1875	2.70	0.42	1.28	0.60	2.56	0.98	0.70	1.50	0.59	0.78	5.57	3.01	20.69
1876	2.38	1.00	1.27	0.96	3.05	0.28	1.25	T	0.46	2.51	0.52	1.12	14.80
1877	1.01	0.10	4.30	1.07	2.84	0.61	T	0.00	0.64	0.18	2.28	0.92	13.95
1878	0.99	2.90	1.26	1.58	2.17	0.27	0.15	0.97	2.82	1.50	0.45	0.05	15.11
1879	1.35	0.65	0.32	2.71	0.21	0.94	0.01	0.12	0.23	2.82	0.63	2.36	12.35
1880	0.70	2.55	0.92	1.22	0.74	0.00	0.00	0.59	0.34	0.83	0.50	1.85	10.24
1881	4.20	2.66	0.58	0.00	0.00	0.00	0.14	0.02	[0.40]	1.74	0.54	0.25	[10.53]
1882	0.75	2.14	0.20	[1.50]	0.20	0.68	0.00	0.22	0.27	3.58	0.37	0.66	[10.57]
1883	1.03	0.32	1.14	0.47	2.11	T	T	0.62	0.00	2.21	1.46	1.62	10.98
1884	0.77	2.21	3.63	3.85	1.51	0.61	0.00	0.08	2.41	1.46	0.00	2.96	19.49
1885	2.12	2.62	0.00	4.12	0.95	2.64	0.00	0.51	0.52	0.47	3.63	1.82	19.40
1886	2.10	0.88	1.82	1.57	0.00	0.30	0.00	0.42	1.23	1.97	1.72	0.59	12.60
1887	1.80	2.28	0.49	1.88	0.08	0.25	0.43	0.43	0.55	0.15	0.00	0.80	9.14
1888	2.60	1.06	1.20	0.21	0.28	1.07	1.00	0.36	0.61	0.15	1.06	2.43	12.03
1889	0.55	0.40	1.15	1.57	1.95	0.05	0.00	1.03	0.65	3.81	0.79	4.96	16.91
1890	3.87	3.92	4.23	1.03	0.85	0.54	0.40	0.12	0.07	.....	.....	.....	.....
Means	1.63	1.53	1.32	1.47	1.47	0.48	0.25	0.45	0.57	1.40	1.17	1.68	13.46

PARK CITY, UTAH.

1889	.....	.....	.....	.....	.....	.....	.....	0.00	0.00	0.66	0.00	3.00	.....
1890	0.00	0.80	0.40	0.00	0.00	[0.20]	[0.00]	.....	.....	.....	.....	.....	.....
Means	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5.06

PRICE, UTAH.

1889	0.30	0.40	0.60	0.30	0.85	0.00	1.00	0.00	0.80	0.80	0.00	0.40	5.45
1890	0.08	0.05	0.02	[0.00]	0.00	0.00	0.00	0.10	0.25	.....	.....	.....	.....
Means	0.19	0.22	0.31	0.15	0.42	0.00	0.50	0.05	0.52	0.80	0.00	0.40	3.56

PROMONTORY, UTAH.

1870	[1.11]	0.52	1.24	0.16	0.19	0.82	0.00	0.00	0.00	[0.00]	[0.00]	0.81	[4.85]
1871	0.77	1.23	0.25	0.45	0.94	0.00	0.25	1.03	0.90	0.21	1.54	1.25	8.82
1872	0.10	0.44	0.20	0.00	0.82	0.20	0.00	0.00	1.13	0.00	0.12	0.86	3.87
1873	0.72	2.00	0.20	0.01	0.56	0.03	0.00	0.72	0.13	1.36	0.30	1.88	7.91
1874	1.15	1.80	2.50	0.21	[0.00]	0.00	0.70	0.40	[0.00]	[0.90]	0.84	0.38	[8.88]
1875	3.65	0.20	0.85	0.50	2.22	0.10	0.60	0.45	[0.60]	0.45	1.10	2.60	[13.32]
1876	2.20	1.40	1.95	1.70	[1.00]	0.00	0.85	0.00	0.32	1.61	[0.00]	1.00	[12.03]
1877	1.55	0.42	1.00	0.35	1.20	0.00	0.00	0.00	0.73	0.69	0.59	0.45	6.98
1878	0.37	0.78	1.43	1.54	1.58	2.07	0.31	0.97	1.86	1.17	0.00	0.00	12.08
1879	1.45	0.59	0.31	0.88	0.00	0.60	[0.00]	0.00	0.16	0.78	1.00	1.65	[7.42]
1880	0.00	0.25	0.20	2.03	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.60	3.30
1881	0.00	1.07	0.25	0.30	0.57	0.00	0.40	1.20	0.00	0.85	0.20	0.40	5.24
1882	1.05	1.15	0.58	0.32	0.75	1.15	0.00	0.11	1.00	1.42	0.05	0.60	8.18
1883	0.50	0.20	2.08	0.10	0.25	0.00	0.60	0.08	0.15	1.20	2.12	0.41	7.69
1884	0.90	1.75	1.08	4.37	1.42	1.02	0.00	0.00	2.17	0.56	0.00	1.40	14.67
1885	0.32	1.02	0.15	1.32	1.14	1.40	0.00	1.15	0.10	0.00	1.48	0.80	8.88
1886	1.38	0.71	1.25	0.05	0.00	0.19	0.00	0.23	0.91	0.16	0.72	0.10	5.70
1887	1.15	0.40	0.00	[1.00]	0.00	0.22	0.09	0.10	0.30	0.00	0.00	0.30	[3.56]
1888	2.70	0.30	0.31	[0.80]	0.00	0.06	0.10	0.01	0.12	0.02	0.22	2.10	[6.74]
1889	0.45	0.11	0.04	0.04	1.05	0.00	0.00	1.00	0.44	0.10	0.17	0.93	4.33
1890	1.80	0.70	0.40	0.30	0.00	0.00	0.00	0.00	.....	.....	.....	.....	.....
Means	1.11	0.81	0.77	0.78	0.66	0.37	0.19	0.35	0.55	0.57	0.52	0.93	7.61

Monthly and annual precipitation at stations in Utah—Continued.

PROVO CITY, UTAH.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1889	.....	.....	.....	.....	.....	.....	.....	0.00	0.50	1.12	1.15	2.88	.....
1890	1.04	0.50	0.60	0.00	1.00	[0.20]	[0.00]	.....	.....	.....	.....	.....	.....
Means	1.04	0.50	0.60	0.00	1.00	0.20	0.00	0.00	0.50	1.12	1.15	2.88	8.99

RICHFIELD, UTAH.

1889	.....	.....	.....	.....	.....	.....	.....	1.75	.....	0.47	0.23	1.78	.....
1890	[1.00]	[0.60]	0.61	1.51	0.06	T	0.52	0.30	0.53	.....	.....	.....	.....
Means	1.00	0.60	0.61	1.51	0.06	T	0.52	1.02	0.53	0.47	0.23	1.78	8.33

SALT LAKE CITY, UTAH.*

1857	.....	0.85	0.97	0.19	0.83	1.00	0.64	0.85	0.58	1.00	.....	.....	.....
1858	.....	.....	.....	.....	.....	.....	.....	.....	0.15	3.28	.....	.....	.....
1859	0.65	3.88	3.33	1.43	1.85	0.11	[0.54]	0.13	1.58	0.22	3.85	0.70	[18.27]
1861	1.40	2.13	2.49	1.47	1.10	[0.75]	1.57	1.47	3.01	[1.71]	1.76	2.13	[20.99]
1863	.....	2.74	.....	.....	.....	0.30	.....	.....	.....	.....	.....	.....	.....
1864	3.28	0.86	2.94	1.37	1.96	1.50	0.00	1.25	0.73	3.75	1.19	5.04	23.87
1865	1.22	3.72	2.38	0.54	0.26	0.70	1.75	0.62	1.52	3.15	0.42	6.39	22.67
1866	1.83	1.60	2.72	3.34	2.05	5.34	8.73	1.98	2.05	1.80	2.20	4.56	38.20
1867	.....	1.75	.....	.....	.....	1.47	2.61	9.43	1.07	1.41	.....	3.65	.....
1868	2.64	.....	.....	.....	2.43	4.00	.....	3.69	.....	.....	.....	.....	.....
1872	.....	.....	.....	.....	2.50	3.90	0.00	1.56	0.54	1.01	0.90	1.90	.....
1873	3.65	5.60	1.60	1.25	10.05	0.85	0.60	4.75	1.00	1.60	1.00	1.00	32.95
1874	[1.52]	[1.38]	1.31	0.90	2.84	0.74	2.42	1.63	0.20	1.74	2.16	0.73	[17.57]
1875	3.05	0.79	2.81	1.50	2.91	0.90	1.01	0.25	1.22	1.36	5.81	2.03	23.64
1876	1.23	1.52	4.00	2.09	4.30	0.09	0.83	0.92	0.42	3.27	0.81	1.80	21.28
1877	0.87	0.38	2.93	2.14	3.49	0.80	0.02	0.28	0.90	2.41	1.02	1.11	16.35
1878	1.07	3.49	2.54	2.63	2.50	0.35	1.08	0.81	3.15	1.39	0.63	0.11	19.75
1879	1.87	0.71	0.67	3.26	0.10	1.34	0.07	0.06	0.01	1.62	0.32	3.08	13.11
1880	0.29	1.02	0.43	2.37	1.85	0.01	0.20	0.74	0.56	0.40	1.17	1.90	10.94
1881	1.24	2.44	0.88	2.37	2.55	0.28	0.21	1.61	0.43	2.19	1.44	1.24	16.88
1882	1.50	0.42	1.12	3.81	0.26	2.24	0.30	1.61	0.37	2.89	0.54	0.92	15.98
1883	1.47	0.72	1.75	2.92	0.98	0.33	0.10	0.62	0.13	2.24	1.78	1.20	14.24
1884	0.71	2.23	3.69	2.89	1.78	0.33	0.27	0.73	1.91	0.36	0.50	2.12	17.52
1885	1.48	1.56	2.64	3.47	2.49	2.67	0.58	0.90	1.29	0.59	3.10	0.92	21.69
1886	1.91	1.36	2.60	4.43	0.06	1.02	T	0.59	1.88	1.98	1.79	1.27	18.89
1887	2.36	1.41	0.35	1.87	0.73	0.37	1.23	0.69	0.55	0.30	0.25	1.55	11.66
1888	1.52	1.22	2.18	0.99	0.34	0.98	0.24	0.63	0.51	0.80	2.00	2.21	13.62
1889	0.73	0.81	1.64	1.52	2.97	0.01	0.08	0.92	0.52	3.85	1.04	4.37	18.46
1890	3.07	2.05	1.12	0.74	0.58	0.32	.....	.....	.....	.....	.....	.....	.....
Means	1.52	1.38	1.92	2.35	1.81	0.75	0.54	0.81	0.88	1.71	1.52	1.66	16.85

* The originals of all records prior to March, 1874, are not in the possession of the Signal Service. The monthly totals are taken from the records of the Smithsonian Institution.

ST. GEORGE, UTAH.

1861	1.01	0.43	.....	0.04	.....	0.04	.....	1.17	0.98	.....	0.23	.....	.....
1862	.....	0.98	0.64	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1863	0.85	0.90	.....	.....	.....	.....	.....	0.37	.....	.....	.....	.....	.....
1864	.....	.....	.....	.....	1.11	.....	0.22	0.11	0.51	1.36	1.03	0.94	.....
1865	2.44	0.83	0.01	0.52	0.00	0.01	1.03	[0.27]	0.20	0.80	0.25	1.30	[7.66]
1866	.....	.....	.....	0.08	.....	.....	.....	.....	.....	.....	.....	.....	.....
1871	0.65	1.24	0.74	0.96	0.86	0.12	0.05	0.46	0.21	0.30	0.95	2.89	9.43
1872	0.44	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.59
1877	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.30	0.00	0.16	.....
1878	0.56	1.87	0.74	0.96	0.86	0.00	[0.24]	0.46	0.21	0.00	0.51	0.14	[6.55]
1879	0.65	0.01	0.00	0.36	0.00	0.00	0.05	0.06	0.03	0.10	1.67	2.98	5.91
1880	0.44	0.48	.....	T	0.00	0.12	.....	0.05	0.05	.....	.....	.....	.....
1889	.....	.....	.....	.....	.....	0.05	0.33	0.00	1.26	0.82	0.00	4.10	.....
1890	2.97	1.05	1.47	.....	.....	0.00	0.00	0.15	1.20	.....	.....	.....	.....
Means	1.11	0.78	0.51	0.36	0.40	0.04	0.24	0.28	0.46	0.46	0.52	1.58	6.74

Monthly and annual precipitation at stations in Utah—Continued.

STOCKTON, UTAH.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1889	.....	.....	.....	.....	.....	.....	.....	0.00	0.13	2.14	0.36	1.24	.....
1890	0.00	0.80	0.00	0.00	0.09	[0.20]	[0.10]	.....	.....	.....	.....	.....	.....
Means	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5.56

TERRACE, UTAH.

1870	.....	0.54	0.50	0.00	0.08	0.11	0.00	0.00	0.00	0.00	.....	0.30	.....
1871	0.21	0.10	0.09	0.08	0.19	0.04	0.01	0.03	0.01	0.00	0.62	1.99	3.37
1872	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.10	0.47	0.76
1873	1.27	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1874	[0.61]	[0.35]	0.66	0.31	0.53	0.18	0.75	0.00	0.00	0.00	1.83	0.00	[5.22]
1875	2.15	0.00	0.00	0.00	0.13	[0.25]	0.20	0.06	0.00	0.00	0.65	0.95	[4.39]
1876	1.20	0.00	1.40	0.20	0.16	0.35	0.75	0.70	0.00	[0.20]	0.13	0.10	[5.19]
1877	0.78	0.10	0.59	[0.40]	0.65	0.00	0.00	0.00	0.00	0.07	0.30	2.12	[5.01]
1878	0.00	0.52	0.23	0.47	1.17	0.20	0.13	1.21	1.45	0.27	0.00	0.00	5.65
1879	0.70	0.05	0.00	0.38	0.00	0.32	0.00	0.09	0.27	0.25	0.85	1.65	4.56
1880	0.00	0.35	0.00	0.30	0.10	0.00	[0.00]	0.00	0.08	0.15	0.00	1.75	[2.73]
1881	0.85	1.30	0.38	0.60	0.12	0.00	0.29	0.34	0.00	0.48	0.00	0.45	4.81
1882	0.35	0.85	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.05	[0.00]	0.10	[1.65]
1883	0.85	0.10	0.18	1.13	0.50	0.20	0.15	0.61	0.00	0.60	0.45	0.30	5.07
1884	0.70	0.90	1.58	1.74	1.02	0.46	0.03	0.05	1.61	0.57	0.00	1.38	10.04
1885	0.12	0.15	T	0.27	1.12	0.53	0.00	0.02	0.25	T	0.75	0.03	3.24
1886	0.57	0.58	0.50	0.39	0.12	1.23	0.15	0.00	0.55	0.05	0.25	0.15	4.51
1887	0.32	0.22	0.20	0.15	0.09	0.00	0.00	0.00	0.00	0.00	0.30	0.10	1.38
1888	0.10	.....	.....	.....	0.00	0.05	0.00	0.00	0.00	.....	.....	.....	.....
1889	0.05	0.00	1.45	1.00	1.00	0.50	0.00	0.00	0.00	0.75	0.00	1.80	6.55
1890	1.35	0.45	0.35	0.15	0.15	0.15	0.00	0.00	0.15	.....	.....	.....	.....
Means	0.61	0.35	0.44	0.40	0.36	0.23	0.12	0.16	0.22	0.19	0.37	0.77	4.29

WANSHIP, UTAH.

1867	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3.70	.....
1868	1.45	0.70	2.00	.....	.....	.....	.....	.....	.....	.....	.....	1.40	.....
1869	1.70	1.40	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1871	1.00	1.55	2.20	.....	.....	.....	.....	.....	.....	.....	.....	1.98	.....
1872	0.23	2.05	1.45	.....	.....	2.10	.....	.....	.....	0.28	.....	.....	.....
1874	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.38	.....
Means	1.10	1.42	1.88	.....	.....	2.10	.....	.....	.....	0.28	.....	1.86	.....

APPENDIX No. 57.

MEAN MONTHLY AND ANNUAL TEMPERATURE FOR STATIONS IN UTAH.

Interpolated values are given in brackets [ ].

BEAVER, UTAH.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1889	.....	.....	.....	.....	54.6	62.8	71.1	69.5	59.8	51.4	35.3	38.0	.....
1890	26.0	34.3	40.7	49.5	59.8	60.9	.....	.....	.....	.....	.....	.....	.....
Means	26.0	34.3	40.7	49.5	57.2	61.8	71.1	69.5	59.8	51.4	35.3	38.0	49.6

BLUE CREEK, UTAH.

1877	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	39.7	30.8	.....
1878	27.7	35.3	44.2	[54.0]	58.0	72.0	79.8	81.6	62.9	49.1	43.9	26.9	[53.0]
1879	26.9	39.8	49.9	56.5	63.0	70.4	82.2	80.0	71.5	53.6	37.1	30.8	55.1
1880	28.4	[32.0]	34.4	51.3	59.8	70.3	77.1	75.2	64.5	50.3	29.2	30.7	[50.3]
1881	27.8	34.2	41.7	55.9	64.0	77.6	81.0	79.7	67.0	53.6	34.6	31.9	54.1
1882	22.3	26.5	38.8	49.0	61.3	73.1	81.2	81.4	67.4	47.7	35.0	34.3	51.5
1883	[25.0]	26.1	44.2	47.3	59.7	70.4	79.6	78.6	69.6	48.4	40.9	27.6	[51.4]
1884	23.5	26.0	39.8	45.8	60.4	69.3	71.3	75.8	60.2	50.2	42.0	30.2	49.5
1885	24.3	33.8	45.2	55.7	61.8	68.8	84.6	79.8	69.5	56.0	42.1	29.7	54.3
1886	24.6	35.9	37.3	51.9	65.9	71.7	82.1	78.6	68.1	50.3	30.6	34.2	52.6
1887	34.2	33.7	47.1	53.0	72.1	78.9	85.0	79.6	67.2	53.5	41.3	28.8	56.2
1888	17.6	[32.0]	38.4	58.1	67.0	78.3	83.3	79.9	71.7	54.7	[38.0]	31.7	[54.2]
1889	19.5	27.6	47.0	61.6	66.9	82.8	88.4	83.1	66.4	52.7	38.3	36.0	55.8
1890	21.1	34.8	41.0	58.3	68.7	73.4	.....	.....	.....	.....	.....	.....	.....
Means	24.8	32.1	42.2	53.7	63.7	73.6	81.3	79.4	67.2	51.7	37.9	31.0	53.2

COALVILLE, UTAH.

1869	.....	.....	36.9	43.1	57.6	65.1	72.1	69.5	60.4	45.5	38.9	20.6	.....
1870	26.4	28.2	32.8	48.0	54.5	65.2	73.0	67.3	59.0	45.6	37.3	18.5	46.3
1871	24.9	27.8	37.4	46.2	57.2	67.1	72.2	66.8	59.2	45.1	30.9	27.0	46.8
1872	20.8	30.5	33.6	43.0	57.2	64.1	.....	.....	.....	.....	.....	.....	.....
1873	28.0	.....	34.6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1874	24.4	22.0	31.0	43.2	54.7	63.2	73.0	.....	.....	.....	.....	26.2	.....
1875	23.1	22.7	29.3	43.3	52.9	61.6	68.2	69.6	61.4	49.8	34.8	24.9	45.1
1876	18.7	23.8	31.4	42.3	52.7	65.2	69.6	66.8	60.2	[46.0]	35.5	24.6	[44.7]
1877	22.4	29.0	43.1	44.4	53.6	60.8	70.5	67.7	59.3	46.8	34.5	24.2	46.4
1878	23.7	31.7	40.1	45.5	53.1	62.7	71.2	72.0	57.0	44.3	38.3	22.8	46.9
1879	22.6	33.1	[34.0]	49.7	56.3	61.5	68.8	[68.0]	[58.0]	47.0	29.9	26.2	[46.3]
1880	24.1	21.4	25.6	40.5	50.6	60.1	66.8	64.2	55.8	[46.0]	21.4	28.3	[42.1]
1881	22.7	31.4	35.9	48.5	56.4	63.2	69.1	66.6	54.0	43.6	[34.0]	[24.0]	[45.8]
1882	15.3	19.9	29.3	[45.0]	50.2	58.0	66.6	67.8	57.0	43.7	[34.0]	[24.0]	[42.6]
1883	.....	.....	35.3	.....	45.6	55.4	.....	.....	.....	.....	.....	.....	.....
Means	22.9	26.8	34.0	44.8	53.8	62.4	70.1	67.8	58.3	45.8	33.6	24.3	45.4

CORINNE, UTAH.

1870	[25.0]	41.0	44.0	40.8	58.6	72.1	82.2	76.2	66.2	56.8	40.2	24.9	[52.3]
1871	27.0	34.0	40.2	49.1	62.0	75.9	80.6	75.6	70.2	47.3	35.9	30.9	52.4
1872	27.5	35.6	41.1	46.2	59.3	71.3	72.3	73.3	60.5	49.4	30.1	31.8	49.9
1873	31.9	24.7	38.5	45.5	52.6	70.1	77.1	74.0	62.3	46.3	41.5	22.1	48.9

Mean monthly and annual temperature at stations in Utah—Continued.

CORINNE, UTAH—Continued

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1874	26.2	23.3	31.7	49.9	65.5	71.1	83.8	79.0	65.2	57.5	40.4	31.6	52.1
1875	24.9	26.7	32.7	51.4	61.9	72.8	81.2	77.2	69.8	56.7	38.2	33.0	52.2
1876	25.2	30.9	36.2	50.6	59.8	72.7	79.1	73.8	66.6	52.5	35.8	25.6	50.7
1877	20.7	25.3	41.7	41.8	49.8	61.3	.....	.....	.....	.....	36.9	28.0	.....
1878	25.6	35.2	46.8	52.8	60.0	73.9	82.9	82.0	64.6	44.6	40.0	25.9	52.8
1879	24.8	37.8	47.8	54.5	62.0	70.1	81.2	78.3	69.0	49.8	33.6	27.3	53.0
1880	24.8	24.4	32.0	47.6	57.7	70.5	78.0	75.8	63.9	49.3	27.3	31.2	48.5
1881	27.0	34.9	41.8	56.1	64.5	[72.0]	78.4	76.3	61.8	50.3	37.4	29.5	[52.5]
1882	30.3	22.2	35.6	47.0	60.6	72.6	80.0	80.8	65.6	45.8	33.6	31.4	50.4
1883	21.6	19.4	46.2	49.0	60.5	75.3	84.9	80.9	77.3	48.6	35.9	28.1	52.3
1884	22.9	26.5	39.2	49.5	61.4	72.7	77.8	77.4	59.5	51.6	39.1	32.9	50.9
1885	25.0	35.9	45.8	56.1	63.0	70.0	80.6	74.3	65.2	50.2	39.5	31.3	53.1
1886	26.9	37.7	37.8	52.0	67.6	74.6	84.8	81.5	64.0	64.2	29.5	33.1	54.5
1887	31.6	31.4	46.1	50.8	65.8	73.9	81.3	77.3	67.4	51.0	37.2	25.8	53.3
1888	16.1	34.1	38.6	58.2	63.5	73.9	81.5	78.6	72.0	53.6	39.7	31.8	53.5
1889	18.9	28.3	48.2	57.4	63.0	74.9	83.5	81.3	62.4	52.9	36.0	35.3	53.5
1890	20.0	30.6	39.4	53.5	66.2	70.5	.....	.....	.....	.....	.....	.....	.....
Means	24.9	30.5	40.5	50.5	61.2	72.0	80.6	77.6	66.0	51.5	36.2	29.6	51.8

DOUGLAS, CAMP, UTAH.

1862	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	31.7	.....
1863	28.8	30.2	41.9	52.2	65.0	75.2	79.8	76.5	66.1	51.1	37.8	30.9	53.0
1864	29.0	35.2	41.5	51.7	61.6	68.3	77.8	78.1	63.2	[53.0]	39.5	31.3	[52.5]
1865	26.0	27.6	36.0	43.1	68.2	70.2	73.1	77.7	63.3	55.6	47.9	23.6	51.0
1866	28.3	33.5	43.7	48.0	58.5	[69.0]	[76.0]	[75.0]	64.8	55.6	43.4	37.4	[52.8]
1867	33.9	32.6	31.0	47.2	55.7	66.3	74.2	77.2	68.1	55.6	44.4	41.1	52.3
1868	23.2	27.1	41.5	50.0	54.0	66.1	74.7	75.2	64.4	59.6	41.5	33.0	50.8
1869	29.2	33.8	42.4	47.8	61.8	69.5	75.7	73.7	61.8	53.6	44.8	32.7	52.2
1870	31.7	36.4	34.4	49.2	57.8	68.0	[76.0]	70.3	60.2	50.6	43.4	26.8	50.4
1871	31.4	32.5	38.6	45.4	59.7	74.7	79.1	75.0	75.2	50.3	38.0	35.0	52.9
1872	30.5	36.8	40.7	44.5	58.4	68.8	73.7	73.3	61.8	53.6	32.4	32.5	50.6
1873	31.1	27.5	40.5	43.3	49.2	68.2	75.8	71.9	64.8	47.6	44.2	26.5	49.2
1874	29.4	27.3	32.5	45.7	60.7	66.8	76.3	72.6	62.1	54.2	39.6	35.3	50.2
1875	30.0	30.9	32.2	47.6	57.8	70.0	73.6	73.1	67.0	59.4	41.0	33.8	51.4
1876	26.5	33.4	35.9	48.4	55.8	71.8	77.1	71.1	68.4	55.2	39.3	26.2	50.8
1877	26.2	32.2	46.5	46.4	55.9	65.1	77.9	76.5	65.2	50.1	38.7	32.4	51.1
1878	29.4	34.6	45.1	48.5	54.7	[69.0]	78.3	78.8	61.2	48.3	43.0	28.3	[51.6]
1879	27.6	37.6	49.2	52.4	59.8	66.2	79.8	76.8	71.5	53.1	35.2	27.9	53.1
1880	28.8	25.7	32.1	45.1	[59.0]	67.5	73.3	73.0	63.8	51.3	27.7	31.7	[48.2]
1881	28.9	34.9	39.8	55.8	[59.0]	71.3	75.6	73.8	59.8	49.0	31.4	31.1	[50.9]
1882	22.2	26.4	37.6	44.2	59.2	68.2	76.8	78.0	[65.0]	43.3	[40.0]	29.8	[49.2]
1883	21.1	22.1	47.7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1889	21.0	29.0	48.2	53.7	58.1	71.8	81.2	77.9	61.5	54.0	38.8	39.7	52.9
1890	29.1	33.6	39.5	51.6	61.3	64.6	.....	.....	.....	.....	.....	.....	.....
Means	28.0	31.3	39.9	48.3	58.7	68.9	76.5	75.0	64.7	52.6	39.6	31.8	51.3

DU CHESNE, FORT, UTAH.

1887	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8.9	.....
1888	3.5	21.9	35.2	51.2	56.1	69.6	72.9	67.2	64.4	48.8	34.9	23.6	45.8
1889	6.8	15.4	42.5	52.6	57.0	67.6	73.2	72.2	59.3	48.8	29.9	33.2	46.5
1890	11.6	29.9	37.0	49.4	60.9	63.6	.....	.....	.....	.....	.....	.....	.....
Means	7.3	22.4	38.2	51.1	58.0	66.9	73.0	69.7	61.8	48.8	32.4	21.9	46.0

FLOYD, CAMP, UTAH.

1858	.....	.....	.....	.....	.....	.....	72.0	71.4	60.5	45.0	37.3	23.8	.....
1859	17.7	32.0	34.0	47.4	60.1	78.5	76.4	72.1	58.4	50.7	36.3	20.3	48.6
1860	18.9	25.2	38.8	49.0	57.6	68.3	76.1	74.6	64.2	49.2	36.8	29.5	49.0
1861	21.6	27.5	40.6	49.0	60.5	72.1	80.8	.....	.....	.....	.....	.....	.....
Means	19.4	28.2	37.8	48.5	59.4	73.0	76.3	72.7	61.0	48.3	36.8	24.5	48.8

Mean monthly and annual temperature at stations in Utah—Continued.

FRISCO, UTAH.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1885	.....	.....	.....	.....	.....	.....	72.5	70.4	63.3	54.2	39.5	35.0	.....
1886	28.7	38.6	31.2	41.6	59.3	66.9	74.5	70.3	62.9	47.1	32.2	39.0	49.4
1887	31.9	28.4	45.1	43.6	56.2	66.8	72.2	69.9	63.8	50.6	42.9	26.6	49.8
Means	30.3	33.5	38.2	42.6	57.8	66.8	73.1	70.2	63.4	50.6	38.2	33.5	49.6

KANAB, UTAH.

1874	.....	.....	.....	.....	.....	.....	.....	74.2	66.4	59.4	56.6	38.3	.....
1875	31.6	36.6	32.9	47.3	61.8	72.7	80.8	78.2	65.3	66.8	44.2	41.4	55.0
1876	33.6	36.7	38.8	51.1	60.9	72.9	77.0	72.7	69.9	62.2	46.3	39.3	55.1
1877	41.5	46.5	59.8	52.5	59.8	77.6	85.3	79.2	70.8	51.9	46.9	48.7	60.0
1878	44.2	47.1	[49.0]	51.3	[63.0]	83.8	83.9	80.9	70.3	60.7	50.6	[42.0]	[60.6]
1879	38.6	51.7	63.0	64.0	70.9	77.3	83.3	78.2	72.7	56.5	.....	.....	.....
Means	37.9	43.7	48.7	53.2	63.3	76.9	82.1	77.2	69.2	59.6	48.9	41.9	58.6

KELTON, UTAH.

1878	.....	.....	43.9	49.0	57.9	71.7	78.5	79.2	62.7	45.0	34.6	22.0	.....
1879	21.8	36.1	45.5	54.4	60.6	68.9	79.5	74.5	65.1	46.0	32.8	26.5	51.0
1880	25.3	26.9	30.8	45.4	53.8	66.2	74.5	72.3	55.0	46.9	22.5	26.5	45.4
1881	23.9	36.1	37.4	54.1	54.8	[71.0]	78.4	[76.0]	55.5	43.5	29.5	21.4	[48.5]
1882	21.6	21.1	38.5	48.6	62.0	74.9	[78.0]	82.6	[61.0]	46.3	28.8	29.0	[49.4]
1883	21.1	19.3	43.6	44.8	57.5	72.4	77.7	76.4	66.2	43.5	34.7	24.8	48.5
1884	20.2	23.8	37.1	45.4	59.9	70.8	75.4	74.3	56.0	[48.0]	35.6	33.4	48.3
1885	24.4	38.6	45.3	55.6	62.4	67.8	75.7	71.6	63.3	47.3	40.8	33.3	52.2
1886	29.7	39.3	38.7	50.1	63.2	68.9	79.7	75.5	59.3	45.7	27.5	33.0	50.9
1887	34.4	31.0	44.0	49.3	63.6	72.9	77.7	71.5	60.9	49.2	33.5	24.0	51.0
1888	15.2	32.6	39.9	56.4	62.0	72.0	80.9	78.2	71.0	54.7	40.6	30.8	52.8
1889	17.9	27.7	46.7	55.3	64.7	77.4	85.0	81.2	60.9	55.7	35.1	35.3	53.6
1890	17.4	31.7	40.7	53.0	65.2	70.6	.....	.....	.....	.....	.....	.....	.....
Means	22.7	30.4	40.9	50.9	60.6	71.2	78.4	76.1	61.4	47.6	33.0	28.3	49.5

LOSEE, UTAH.

1889	.....	.....	.....	.....	65.1	66.1	73.0	70.0	58.4	48.3	33.3	34.3	.....
1890	22.2	28.6	36.6	46.5	58.5	63.0	.....	.....	.....	.....	.....	.....	.....
Means	22.2	28.6	36.6	46.5	61.8	64.6	73.0	70.0	58.4	48.3	33.3	34.3	48.1

MOAB, UTAH.

1889	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	54.4	36.2	43.2	.....
1890	30.7	38.8	45.4	[54.0]	68.8	71.5	82.7	74.6	65.3	.....	.....	.....	.....
Means	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	55.5

MOUNT CARMEL, UTAH.

1874	26.1	24.7	34.1	39.3	52.9	67.2	80.3	75.3	72.9	62.9	42.3	35.4	51.1
1876	23.3	28.2	28.9	44.4	54.0	73.2	79.9	70.5	74.7	61.3	52.2	49.4	53.3
1877	.....	45.4	58.5	56.6	58.3	79.8	60.6	81.3	69.4	44.6	.....	.....	.....
1878	40.5	47.6	52.3	51.0	64.1	77.9	78.1	.....	.....	.....	.....	.....	.....

Mean monthly and annual temperature at stations in Utah—Continued.

MOUNT CARMEL, UTAH—Continued.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1889	.....	.....	.....	.....	.....	.....	75.2	69.5	55.7	48.2	33.4	35.6	.....
1890	23.2	29.2	35.2	41.2	51.0	51.6	.....	.....	.....	.....	.....	.....	.....
Means	23.3	35.0	41.8	46.5	56.1	69.9	74.8	74.2	68.2	54.2	42.6	40.1	52.6

MOUNT PLEASANT, UTAH.

1889	.....	.....	.....	.....	.....	.....	.....	59.1	45.2	42.6	27.7	29.1	.....
1890	15.0	22.5	26.8	36.5	46.6	50.8	62.4	.....	.....	.....	.....	.....	.....
Means	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	38.7

NEPHI, UTAH.

1883	.....	.....	.....	41.7	54.2	67.4	71.7	68.4	62.4	41.1	32.6	28.3	.....
1884	22.5	25.0	35.5	42.2	51.3	63.8	66.9	64.3	54.8	46.1	33.2	30.7	44.7
1885	23.1	31.3	41.7	46.4	53.0	61.0	72.2	68.9	.....	.....	.....	.....	.....
1889	.....	.....	.....	.....	57.9	68.2	77.8	76.8	59.5	51.0	34.8	37.1	.....
1890	20.1	29.1	38.4	48.3	58.6	62.0	.....	.....	.....	.....	.....	.....	.....
Means	21.9	28.5	38.5	44.6	55.0	64.5	72.2	69.6	58.9	46.1	33.5	32.0	47.1

OGDEN, UTAH.

1870	[28.0]	49.6	41.2	57.6	63.6	72.9	78.9	71.4	66.8	59.2	44.9	31.9	[55.5]
1871	33.3	34.4	41.0	52.1	65.7	74.7	79.9	70.6	71.6	51.5	29.3	31.1	52.9
1872	31.5	34.0	42.0	53.5	67.3	74.2	75.6	72.5	65.2	56.4	35.9	35.0	53.6
1873	35.4	31.9	45.5	57.7	54.9	73.1	81.7	[77.0]	72.6	55.1	47.8	26.8	[55.0]
1874	31.1	28.5	36.2	55.8	68.9	73.6	83.6	80.4	69.7	56.2	41.9	30.4	54.7
1875	26.5	29.2	33.0	53.9	63.6	72.2	78.7	77.6	70.6	57.5	40.2	35.4	53.2
1876	28.3	31.7	39.2	51.0	55.8	69.3	79.0	74.5	68.7	57.6	42.4	30.3	52.3
1877	29.0	35.0	50.7	51.2	60.7	69.7	.....	.....	.....	.....	42.0	33.1	.....
1878	30.2	38.1	46.8	51.3	57.0	73.8	82.8	83.4	62.3	46.3	43.6	27.5	53.6
1879	27.0	39.6	50.7	57.3	63.2	69.8	81.9	77.4	67.3	49.6	36.9	27.4	54.0
1880	26.6	24.7	30.7	50.5	61.8	75.3	81.1	77.8	60.2	45.9	23.6	29.4	49.0
1881	29.6	40.5	43.5	58.7	[63.0]	[72.0]	77.6	76.1	[66.0]	55.4	37.3	35.5	[54.6]
1882	29.3	32.6	36.0	48.9	60.4	70.6	81.4	79.8	62.6	45.8	34.0	31.5	51.1
1883	23.7	21.9	47.4	48.4	62.0	75.3	81.9	78.3	69.1	46.1	37.1	29.1	51.7
1884	24.4	28.4	41.4	50.7	64.3	75.9	78.8	77.2	61.3	51.6	39.5	34.9	52.4
1885	25.8	37.1	45.0	56.3	62.5	71.0	79.8	77.1	66.2	51.6	43.1	33.6	54.1
1886	28.8	38.9	38.2	52.8	67.8	75.4	84.3	79.8	63.9	51.2	33.6	37.2	54.3
1887	34.0	36.2	47.0	51.9	67.1	73.5	80.3	78.5	65.5	51.1	38.2	27.9	54.3
1888	19.9	37.5	40.6	57.8	63.9	74.0	83.1	79.4	74.4	54.2	39.9	32.0	54.7
1889	19.5	30.6	46.5	54.2	61.3	70.8	80.6	77.6	59.3	49.6	37.9	41.0	52.4
1890	27.4	30.2	35.6	49.1	61.3	61.8	.....	.....	.....	.....	.....	.....	.....
Means	28.1	33.8	41.8	53.4	62.7	72.3	80.6	77.2	66.5	52.2	38.5	32.0	53.3

PROMONTORY, UTAH.

1870	[21.0]	32.0	36.4	50.0	57.2	67.6	73.7	70.8	61.1	[49.0]	[33.0]	21.1	[47.7]
1871	23.1	30.3	36.6	43.6	59.4	[69.0]	79.8	69.4	65.8	43.6	31.1	27.5	[48.3]
1872	22.4	32.0	37.1	45.3	56.2	67.9	74.1	74.8	64.7	56.1	23.2	21.4	47.9
1873	23.9	21.5	45.5	45.0	57.4	71.2	79.0	79.0	63.3	45.9	39.0	20.9	49.3
1874	24.3	20.7	32.7	49.9	[58.0]	67.6	85.3	79.0	[62.0]	[49.0]	36.7	27.9	[49.4]
1875	22.9	28.2	32.0	48.2	58.2	73.6	81.1	77.2	60.9	50.3	38.8	33.6	50.4
1876	24.7	31.0	36.2	50.6	54.2	70.8	78.1	73.2	63.9	55.1	36.5	22.1	49.7
1877	24.6	29.6	47.0	49.3	59.2	68.3	.....	.....	.....	.....	33.3	22.6	.....
1878	25.2	33.1	43.2	49.7	55.6	69.3	78.8	76.3	53.6	40.2	32.7	16.6	47.8
1879	17.0	30.7	41.8	49.1	56.1	64.0	[78.0]	72.4	64.3	45.3	27.9	21.0	[47.3]
1880	21.2	21.4	30.8	44.6	52.9	65.7	69.1	73.6	55.3	52.5	17.1	29.4	[44.5]
1881	23.6	29.8	38.2	[48.0]	60.0	71.6	78.1	74.2	59.0	47.8	29.9	25.6	[48.8]
1882	16.2	22.7	33.8	45.7	57.9	72.8	82.7	82.4	67.1	43.4	36.0	30.9	44.5
1883	7.8	20.2	46.5	[48.0]	59.1	76.0	78.5	78.1	62.6	41.7	30.3	24.3	[47.8]
1884	21.5	22.9	37.6	46.9	58.4	72.5	79.8	71.6	61.8	52.3	[33.0]	26.1	[48.7]
1885	15.7	38.1	44.3	55.3	62.9	70.7	79.0	78.5	67.5	56.2	44.2	32.6	53.8
1886	24.3	34.3	34.8	53.2	66.5	75.7	83.8	80.6	63.7	49.1	29.0	31.8	52.2

Mean monthly and annual temperature at stations in Utah—Continued.

PROMONTORY, UTAH.—Continued.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1887	28.6	26.8	41.2	43.4	57.7	69.2	77.7	74.4	63.8	51.8	34.0	22.9	49.3
1888	14.6	[28.0]	35.2	[49.0]	[58.0]	58.8	71.8	71.5	67.2	53.7	38.0	26.7	[47.7]
1889	26.6	26.0	44.2	54.1	56.3	66.9	79.0	75.7	60.1	51.8	35.8	33.9	50.9
1890	17.9	29.9	38.2	49.9	60.0	62.8	.....	.....	.....	.....	.....	.....	.....
Means	21.3	28.1	38.7	48.5	58.2	69.2	78.3	75.4	62.5	49.2	33.0	25.9	49.0

RICHFIELD, UTAH.

1889	.....	.....	.....	.....	.....	.....	.....	70.2	57.8	51.4	34.7	37.0	.....
1890	.....	.....	40.8	50.0	59.4	66.0	.....	.....	.....	.....	.....	.....	.....
Means	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

ST. GEORGE (HEBERVILLE), UTAH.

1861	31.3	[41.1]	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1863	[31.0]	38.5	.....	.....	.....	.....	88.8	82.1	.....	.....	.....	.....	.....
1864	.....	.....	.....	.....	68.0	77.4	83.8	81.4	75.8	65.4	52.4	42.6	.....
1865	40.9	39.4	48.6	56.5	79.6	84.4	81.8	86.4	72.4	59.8	57.5	34.3	[61.8]
1870	.....	.....	.....	.....	[78.7]	[85.9]	.....	.....	.....	.....	.....	.....	.....
1880	.....	.....	.....	.....	.....	.....	.....	.....	.....	56.1	.....	.....	.....
1889	.....	.....	.....	.....	.....	80.6	88.3	85.7	72.8	61.6	46.6	46.8	.....
1890	37.1	43.6	51.6	.....	.....	78.8	.....	.....	.....	.....	.....	.....	.....
Means	35.1	40.6	50.1	56.5	75.4	81.4	85.7	84.6	73.7	60.7	52.2	41.2	61.4

ST. MARY'S, UTAH.

1865	.....	.....	.....	.....	.....	63.1	66.9	70.2	59.6	46.8	40.5	14.5	.....
1866	19.2	26.5	35.1	36.2	56.2	54.7	71.2	66.7	59.5	47.5	38.1	25.1	[44.7]
1867	.....	25.6	20.9	37.2	53.2	64.2	73.2	75.1	.....	.....	.....	.....	.....
Means	19.2	26.0	23.0	36.7	54.7	60.7	70.4	70.7	59.6	47.2	39.3	19.8	44.4

SALT LAKE CITY, UTAH.

1850	26.4	32.2	35.6	48.0	65.2	71.3	80.6	.....	.....	.....	.....	.....	.....
1853	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	36.6	.....
1854	24.2	35.5	40.5	52.4	.....	.....	.....	.....	.....	.....	41.7	31.6	.....
1855	30.8	37.4	43.2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1857	.....	.....	44.2	49.7	58.0	65.5	74.0	74.2	64.7	53.0	.....	.....	.....
1858	.....	.....	.....	.....	.....	.....	.....	.....	62.0	55.0	37.8	.....	.....
1859	25.0	40.3	41.0	45.7	57.3	76.3	79.3	76.7	61.3	56.7	38.7	22.0	[51.7]
1861	22.2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1863	.....	27.4	.....	.....	.....	73.0	.....	.....	.....	.....	.....	.....	.....
1864	26.6	31.2	41.4	52.4	63.3	68.4	78.3	77.6	65.6	53.4	40.0	30.9	52.4
1865	23.4	26.1	37.2	43.6	67.8	69.9	72.3	76.6	64.3	56.0	45.1	22.6	50.4
1866	23.4	31.7	44.2	48.9	58.2	63.5	76.1	72.4	65.0	55.6	45.0	38.1	51.8
1867	.....	32.6	.....	.....	.....	67.3	74.0	76.7	66.8	56.1	.....	41.1	.....
1868	24.2	.....	.....	.....	55.4	66.0	.....	73.0	.....	.....	.....	.....	.....
1869	.....	.....	.....	.....	.....	.....	75.6	75.5	.....	.....	43.9	30.5	.....
1870	31.8	39.0	.....	51.2	.....	71.0	75.4	73.4	.....	.....	.....	.....	.....
1871	32.8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1872	.....	.....	.....	.....	.....	72.4	76.3	75.0	62.4	62.5	37.6	34.6	.....
1873	34.2	31.8	45.7	47.6	54.1	71.3	74.9	72.4	66.9	46.6	38.8	21.7	50.5
1874	.....	.....	.....	47.3	60.7	67.2	77.5	74.1	62.5	56.1	43.0	33.7	.....
1875	29.6	33.9	35.2	49.5	59.0	68.2	73.8	75.1	67.7	59.1	42.1	35.8	52.4
1876	30.5	35.8	38.0	49.5	55.8	68.6	75.1	72.4	65.6	55.8	40.6	26.9	51.2
1877	27.8	33.9	47.9	47.8	55.1	64.7	76.8	75.3	64.5	50.7	40.3	32.2	51.4
1878	30.4	37.4	46.4	49.2	55.2	68.1	76.3	77.6	60.5	48.5	43.3	30.1	51.9

Mean monthly and annual temperature at stations in Utah—Continued.

SALT LAKE CITY—Continued.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1879	29.1	40.0	49.6	52.9	58.5	65.5	77.0	75.6	68.7	52.2	36.4	30.2	53.0
1880	29.1	26.9	33.7	46.3	53.8	66.4	73.5	72.7	63.8	51.8	30.3	34.4	48.6
1881	32.4	38.4	41.7	53.3	60.1	70.0	74.9	73.1	59.8	50.2	33.5	33.5	51.8
1882	24.2	27.6	36.8	46.0	56.7	67.0	74.5	76.0	64.5	47.1	35.4	35.0	49.2
1883	24.9	24.2	47.0	45.8	57.0	70.5	75.9	76.4	69.3	46.1	39.0	32.9	50.8
1884	29.1	31.3	40.6	48.0	57.7	68.7	73.4	72.6	58.8	52.6	42.1	35.5	50.9
1885	28.0	36.1	44.9	52.3	56.3	63.8	75.7	73.3	64.8	54.7	43.9	34.0	52.3
1886	29.1	39.8	36.6	47.5	61.6	68.5	78.3	75.6	62.3	51.8	31.3	36.6	51.6
1887	33.2	34.0	47.1	48.6	60.4	68.7	75.3	74.0	65.7	52.5	43.7	29.7	52.7
1888	23.2	38.5	40.4	55.5	58.6	68.8	76.6	74.8	70.6	54.0	41.6	35.8	53.2
1889	21.4	29.8	47.7	55.2	58.8	70.3	78.4	77.4	60.6	54.2	39.0	39.6	52.7
1890	24.8	33.7	39.5	50.4	61.3	64.8	.....	.....	.....	.....	.....	.....	.....
Means	27.6	33.4	41.8	49.4	58.6	68.5	76.1	74.8	64.3	53.4	39.8	32.7	51.7

TERRACE, UTAH.

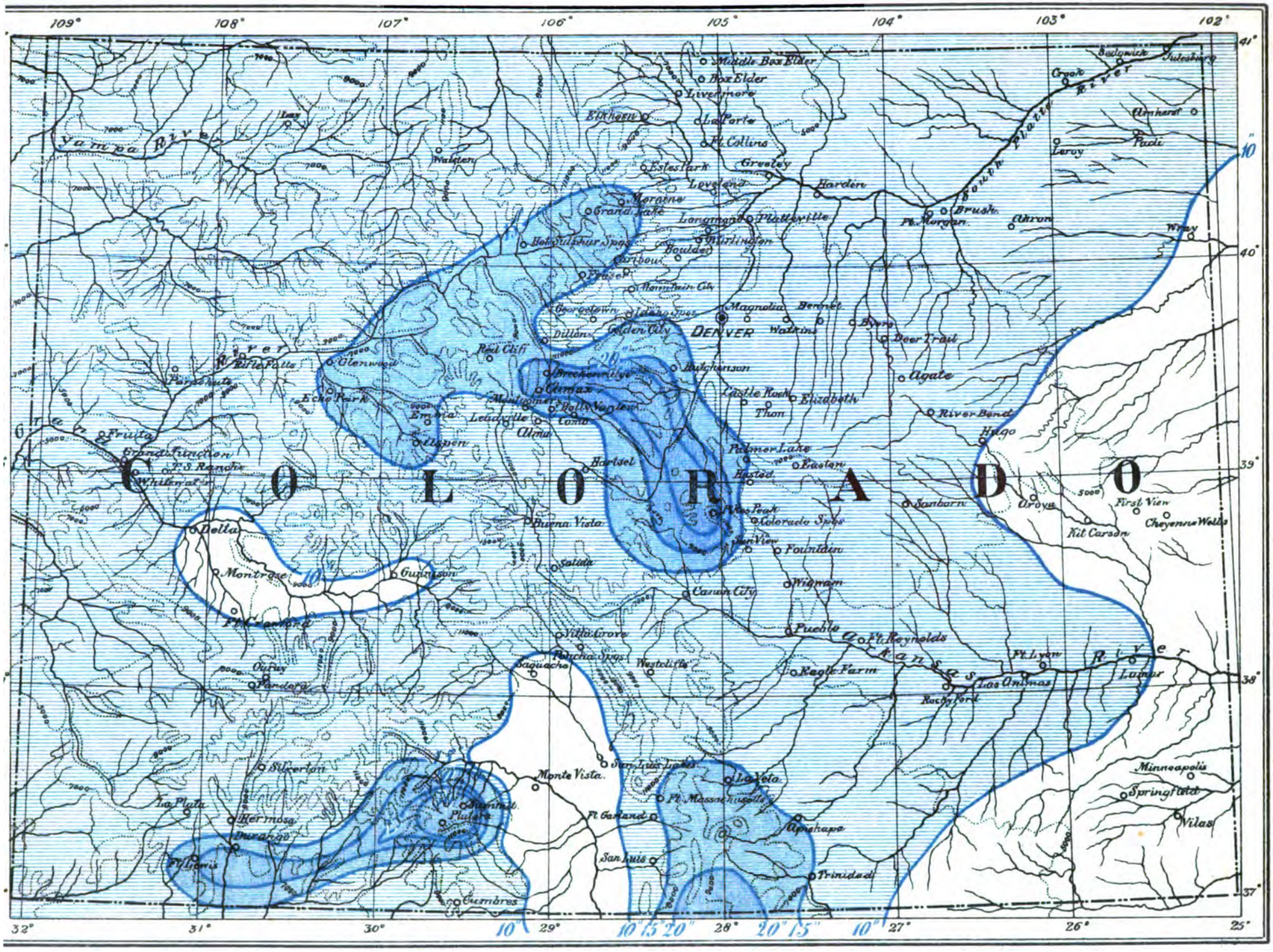
1870	[22.5]	34.0	34.2	56.1	62.9	74.9	86.8	81.8	63.7	54.8	[35.5]	13.5	[51.7]
1871	26.6	32.7	39.7	49.7	61.3	78.5	82.5	78.8	68.5	48.3	35.7	29.1	52.6
1872	31.4	34.5	43.8	50.8	63.3	79.2	81.3	65.6	64.9	47.8	24.5	33.9	51.8
1873	31.1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1874	[22.5]	[30.5]	33.4	50.2	67.7	78.8	89.3	78.7	64.9	46.5	38.4	25.6	[52.2]
1875	21.2	23.9	28.3	46.0	50.8	69.4	77.6	76.6	67.9	56.9	35.6	28.5	48.6
1876	17.7	33.7	48.4	70.2?	69.9	77.8	78.8	79.0	73.1	56.6	38.8	21.6	55.5
1877	21.2	32.8	50.0	.....	61.6	70.4	.....	.....	.....	.....	30.6	22.3	.....
1878	18.2	29.6	42.8	49.0	52.1	79.3	[82.0]	77.1	60.6	45.8	33.1	17.0	[48.9]
1879	23.3	37.1	47.6	56.0	59.5	69.2	79.1	75.5	66.4	49.2	28.7	24.7	51.4
1880	23.8	26.2	35.2	47.0	55.0	69.3	78.5	74.9	66.0	50.1	24.1	28.4	48.2
1881	26.1	32.0	40.0	55.4	62.2	73.2	79.9	74.3	60.7	49.2	32.2	25.8	50.9
1882	13.9	16.0	37.7	45.4	50.6	66.1	[82.0]	79.7	62.1	[53.0]	31.7	33.6	[47.6]
1883	20.2	23.8	51.1	46.1	54.8	70.9	78.2	[78.0]	72.2	48.3	34.9	30.0	[50.7]
1884	25.3	25.6	40.7	47.0	67.0	70.1	78.4	74.4	52.0	[53.0]	40.9	30.9	[50.4]
1885	25.6	37.1	43.3	57.3	61.8	60.8	80.8	78.4	68.5	60.4	46.0	31.8	54.3
1886	26.5	40.7	37.4	49.6	64.2	70.8	83.9	82.8	71.8	53.7	34.2	35.9	54.3
1887	31.0	28.7	47.8	51.3	63.6	78.5	86.1	79.4	71.3	67.1	43.8	23.1	56.0
1888	9.8	36.3	50.1	62.5	71.9	77.1	83.9	83.8	78.5	[53.0]	44.2	37.0	[57.3]
1889	18.1	26.0	51.3	56.2	63.6	76.5	85.0	81.0	64.8	57.5	41.6	34.2	54.6
1890	15.8	29.7	40.0	59.4	68.8	71.8	.....	.....	.....	.....	.....	.....	.....
Means	22.5	30.5	42.1	52.9	61.6	73.1	81.9	77.8	66.6	52.8	35.5	27.7	52.1

WANSHIP, UTAH.

1866	.....	.....	.....	.....	.....	56.2	68.3	66.1	59.4	47.2	37.9	.....	.....
1867	24.8	25.0	20.0	37.1	51.8	62.5	70.2	73.3	63.4	49.6	38.8	35.3	46.0
1868	14.2	24.4	34.6	.....	.....	61.0	72.1	70.5	.....	54.2	.....	26.8	.....
1869	20.0	27.4	36.4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Means	19.7	25.6	30.3	37.1	51.8	59.9	70.2	70.0	61.4	50.3	38.4	31.0	45.5

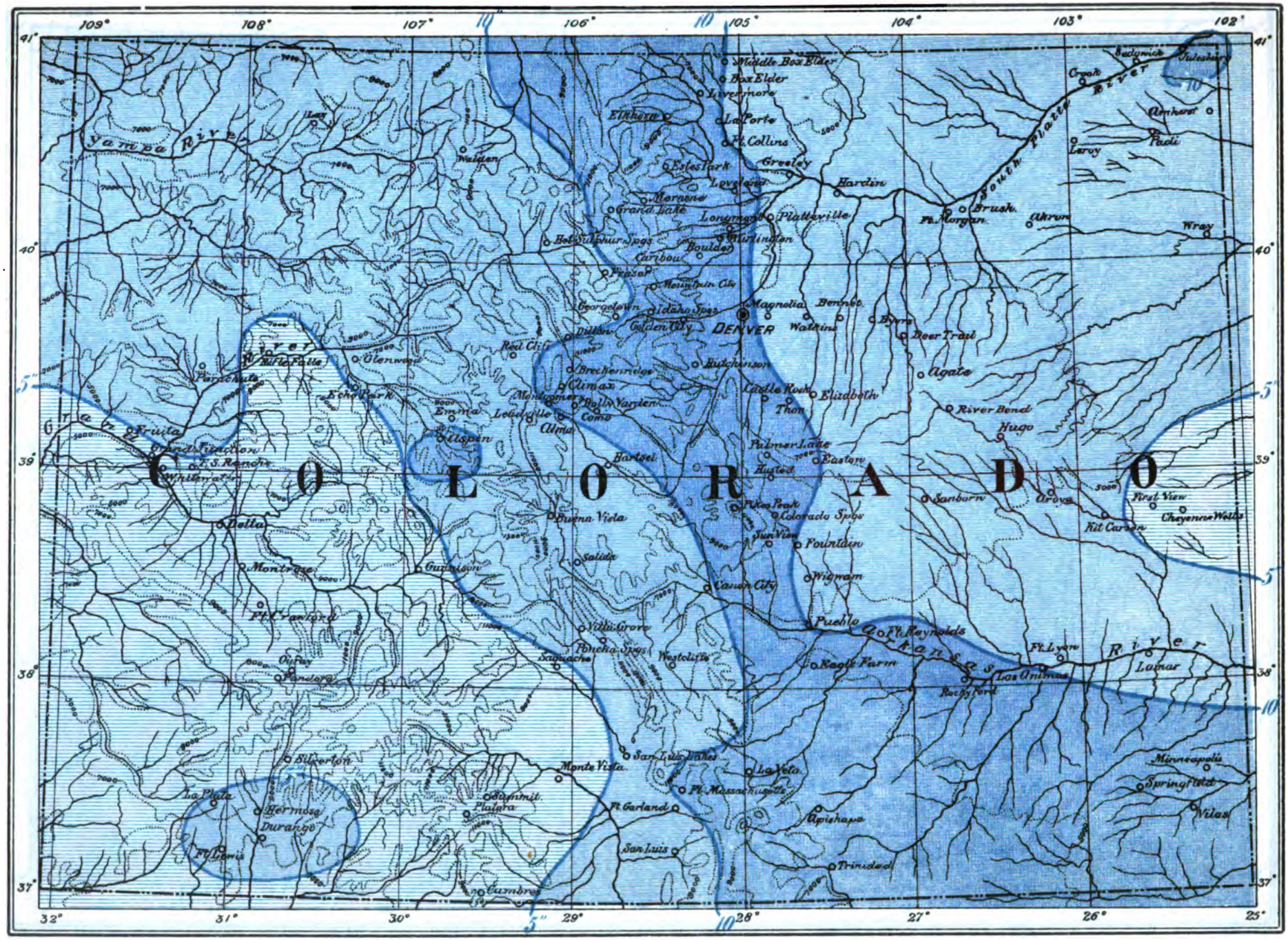
APPENDIX No. 48.

NORMAL PRECIPITATION IN INCHES, ANNUAL.



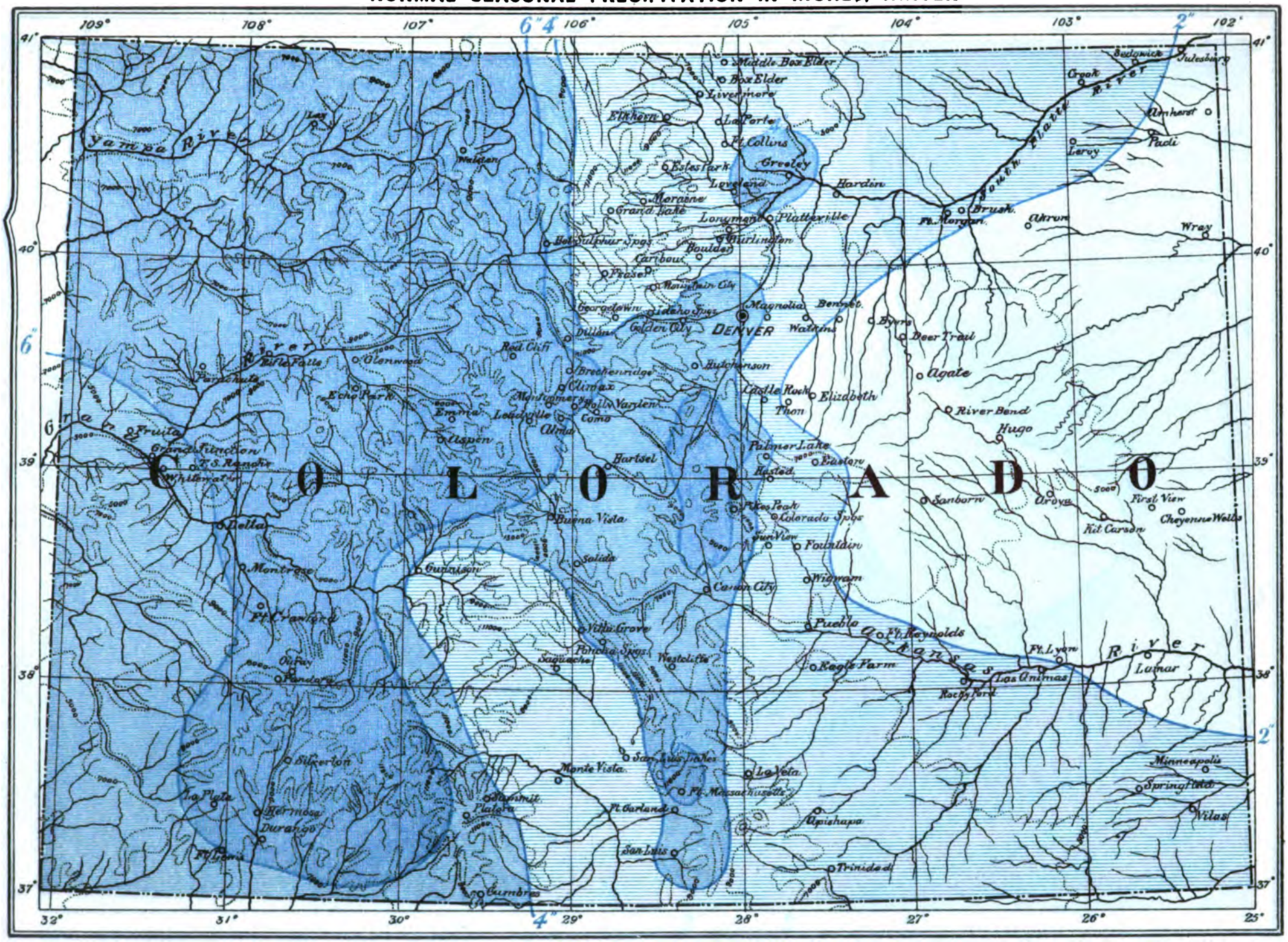
APPENDIX No. 49.

NORMAL SEASONAL PRECIPITATION IN INCHES, SUMMER.



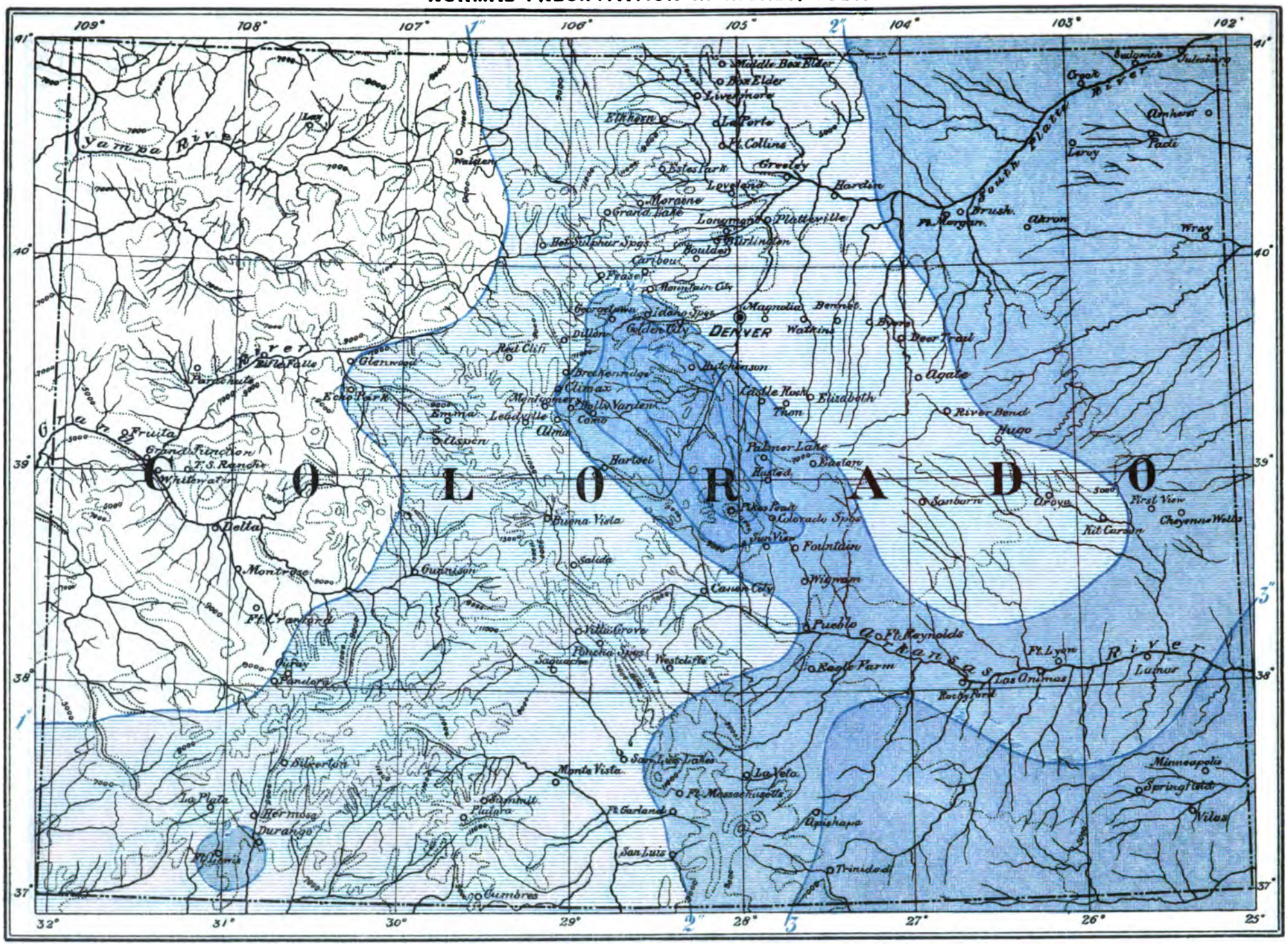
APPENDIX No. 50.

NORMAL SEASONAL PRECIPITATION IN INCHES, WINTER.



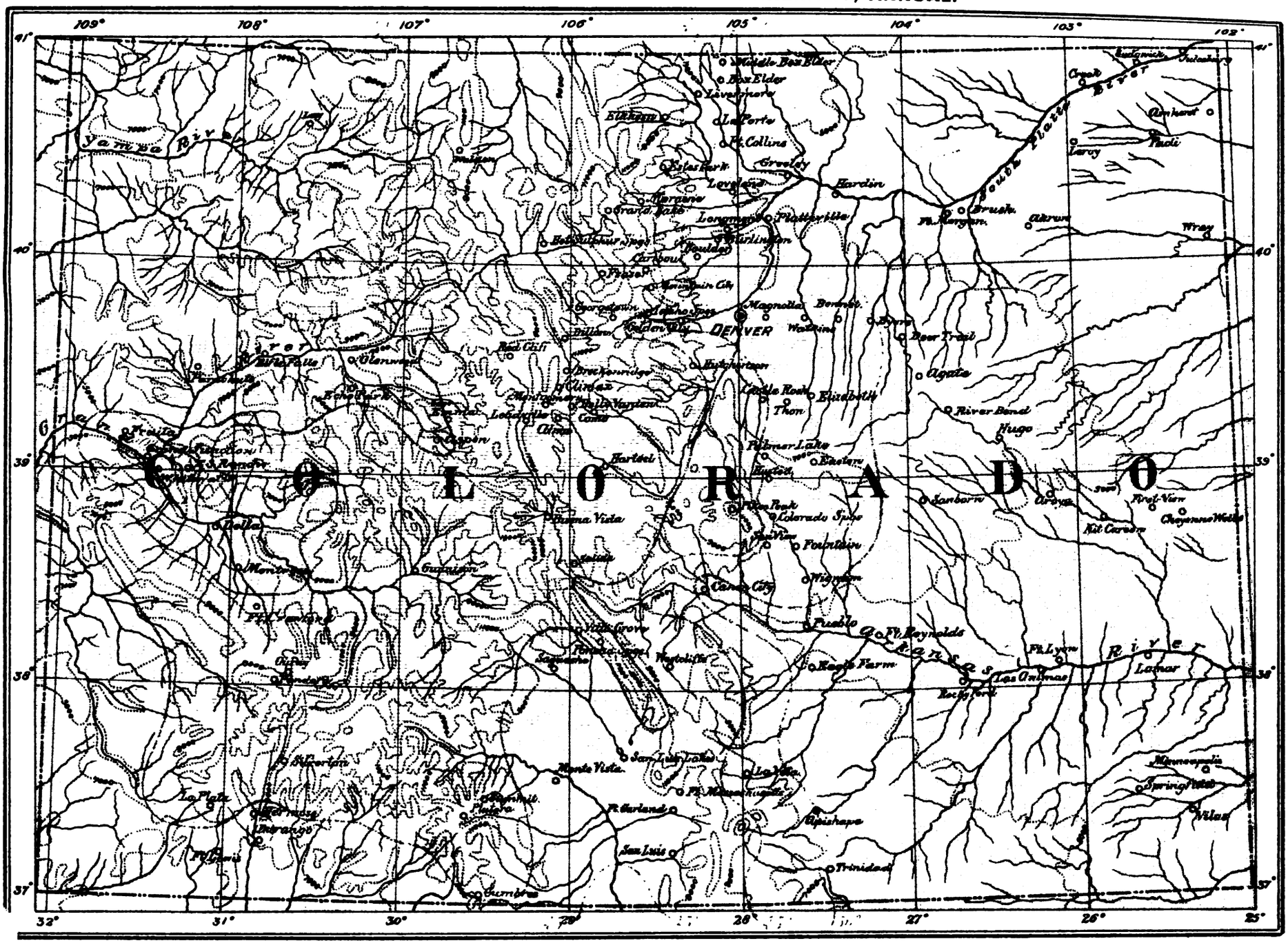
APPENDIX No. 51.

NORMAL PRECIPITATION IN INCHES, JULY.


COLORADO
DENVER
Middle Box Elder
Box Elder
Livermore
Eltheon
La Porte
Ft. Collins
Greeley
Loveland
Moraine
Grand Lake
Longmont
Platteville
Hot Sulphur Spgs
Boulder
Caribou
Fraser
Mountain City
Georgetown
Idaho Spgs
Golden City
Dillon
Red Cliff
Glenwood
Eagle Falls
Parachute
Echo Park
Grand Fruita
Grand Junction
T. S. Ranch
Whitewater
Delta
Montrose
Gunnison
Ft. Crawford
Ouray
Pandora
Silverton
La Plata
Hermosa
Durango
Mancos
Cumbres
Monte Vista
San Luis Lakes
Saguache
Poncha Spgs
Westcliffe
Villa Grove
Salida
Buena Vista
Canon City
Pueblo
Ft. Reynolds
Eagle Farm
Las Animas
Rocky Ford
Ft. Lyon
Lamar
Wigwam
Fountain
Colorado Spgs
Palmer Lake
Elbert
Husted
Parker
Sanborn
Arroyo
Kit Carson
First View
Cheyenne Wells
Hugo
River Bend
Agate
Elizabeth
Castle Rock
Thon
Hutchinson
Bear Trail
Byers
Watkins
Magnolia
Bennet
Brush
Ft. Morgan
Akron
Wray
Amherst
Paoli
Leroy
Julesburg
Crook
Sedgwick
South Platte River
Arkansas River
Yampa River
Grand River
Hartsel
Alma
Leadville
Como
Montgomer
Buckskin Joe
Emma
Aspen
Climax
Breckenridge
Ft. Massachusetts
La Veta
Trinidad
Aguilar
Apishapa
San Luis
Ft. Garland
Placita
Sunnyside
Mineral
Minneapolis
Springfield
Viles
Hoyt
Roggen
Lay
Walden
Parshall
Rifle Falls
Echo Park
Emma
Aspen
Hartsel
Whitewater
Delta
Montrose
Gunnison
Ft. Crawford
Ouray
Pandora
Silverton
La Plata
Hermosa
Durango
Mancos
Cumbres
Monte Vista
San Luis Lakes
Saguache
Poncha Springs
Westcliffe
Villa Grove
Salida
Buena Vista
Canon City
Pueblo
Ft. Reynolds
Eagle Farm
Las Animas
Rocky Ford
Ft. Lyon
Lamar
Wigwam
Fountain
Colorado Springs
Palmer Lake
Elbert
Husted
Parker
Sanborn
Arroyo
Kit Carson
First View
Cheyenne Wells
Hugo
River Bend
Agate
Elizabeth
Castle Rock
Thon
Hutchinson
Bear Trail
Byers
Watkins
Magnolia
Bennet
Brush
Ft. Morgan
Akron
Wray
Amherst
Paoli
Leroy
Julesburg
Crook
Sedgwick
Eltheon
La Porte
Ft. Collins
Greeley
Loveland
Moraine
Grand Lake
Longmont
Platteville
Hot Sulphur Springs
Boulder
Caribou
Fraser
Mountain City
Georgetown
Idaho Springs
Golden City
Dillon
Red Cliff
Glenwood
Eagle Falls
Parachute
Echo Park
Grand Fruita
Grand Junction
T. S. Ranch

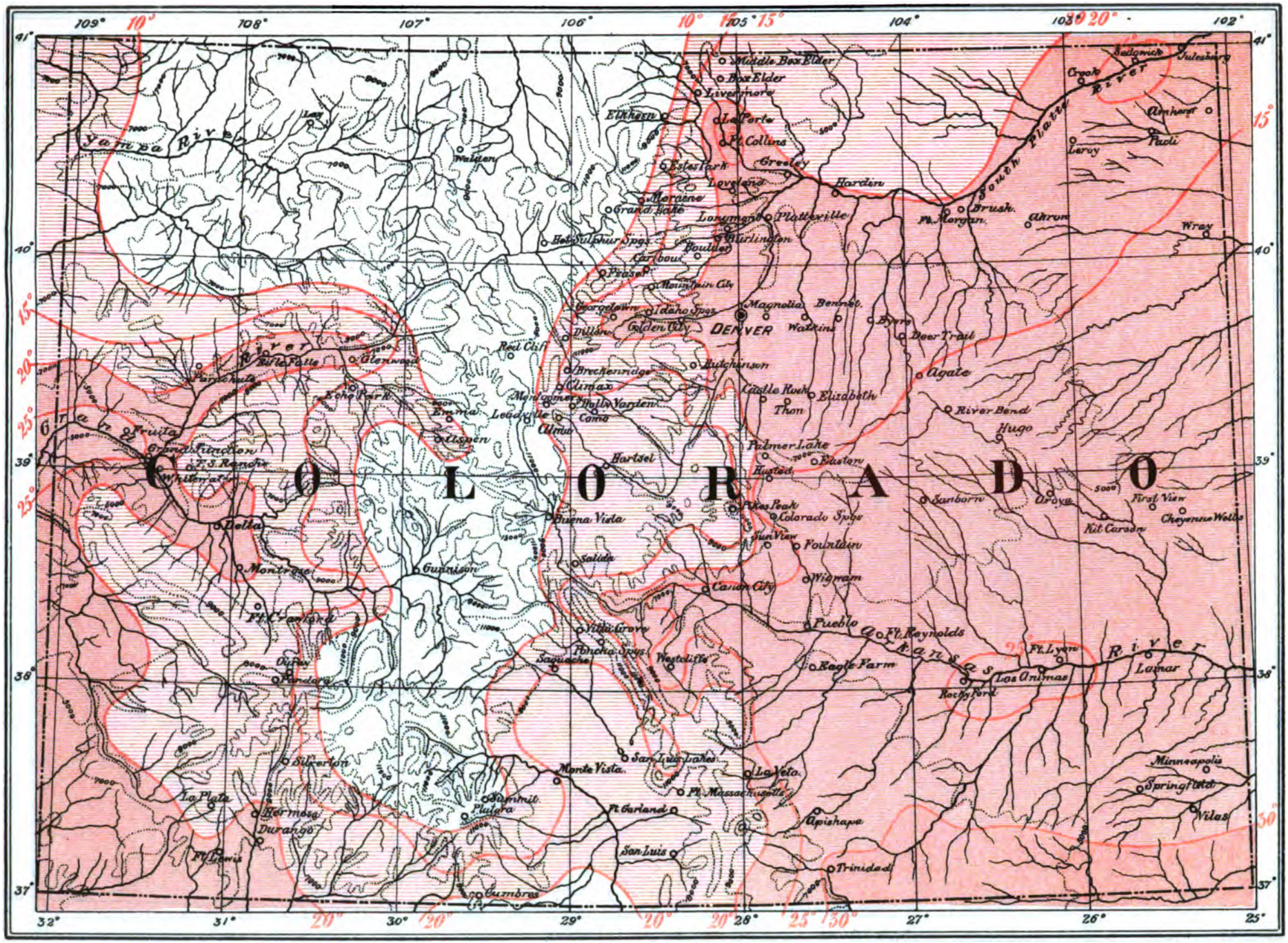
APPENDIX No. 52.

NORMAL TEMPERATURE IN DEGREES FAHRENHEIT, ANNUAL.



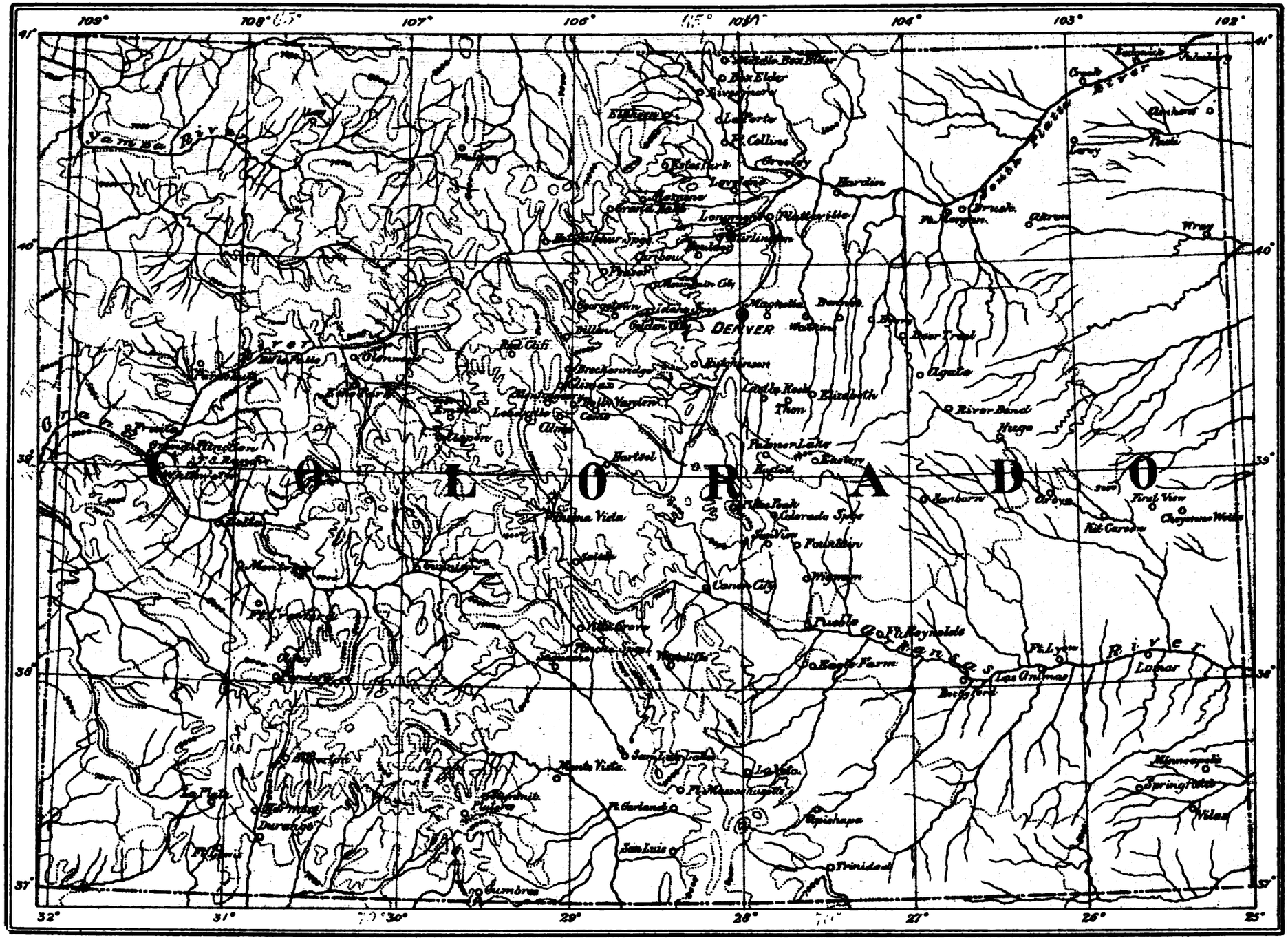
APPENDIX No. 53.

NORMAL TEMPERATURE IN DEGREES FAHRENHEIT, JANUARY.


COLORADO
DENVER
Middle Box Elder
Box Elder
Livermore
Ft. Collins
Greeley
Loveland
Hardin
Platteville
Longmont
Boulder
Brush
Wray
Julesburg
Sedgwick
Crook
Amherst
Paoli
Leroy
Akron
Ft. Morgan
Grand Lake
Hot Sulphur Spgs.
Fraser
Georgetown
Idaho Spgs.
Golden City
Magnolia
Bennet
Byers
Deer Trail
Watkins
Agate
Elizabeth
Kiowa
Bijou
Hugo
River Bend
Limon
Hartsel
Palmer Lake
Eastonville
Husted
Sanborn
Divide
First View
Cheyenne Wells
Kit Carson
Buena Vista
Pikes Peak
Colorado Spgs.
Fountain
Wigwam
Salida
Canon City
Pueblo
Ft. Reynolds
Eagle Farm
Las Animas
Rocky Ford
Lamar
Ft. Lyon
Gunnison
Montrose
Ouray
Silverton
La Plata
Hermosa
Durango
Ft. Lewis
Monte Vista
San Luis Lakes
La Veta
Ft. Massachusetts
Apishapa
Trinidad
San Luis
Ft. Garland
Summit
Plutera
Cumbres
Saguache
Westcliffe
Villa Grove
Poncha Spgs.
Minneapolis
Springfield
Vilas
Yampa River
Grand River
Gunnison River
Arkansas River
South Platte River
Arkansas River
Rio Grande
Rio Blanco
Rio Grande
Rio Grande
Rio Grande

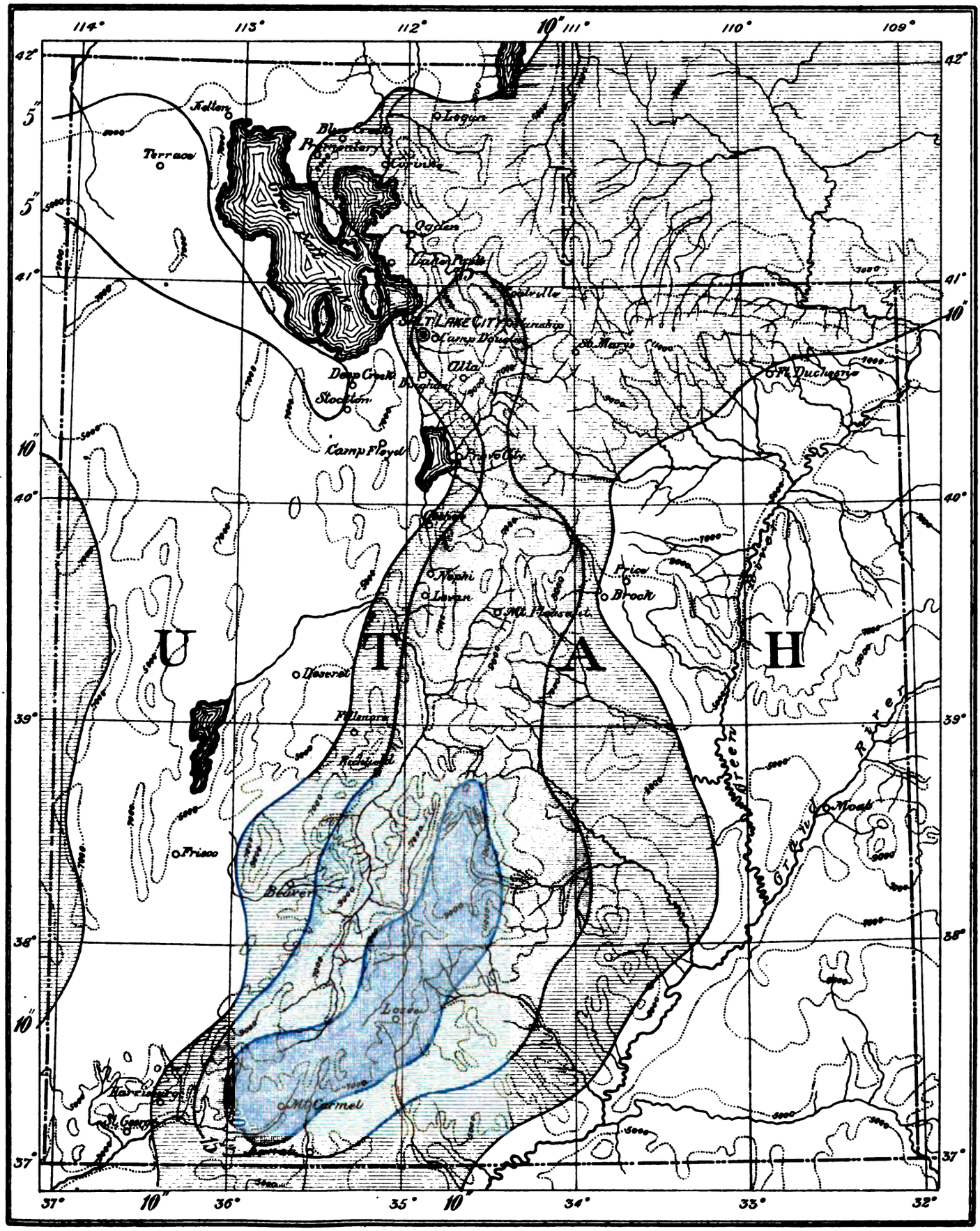
APPENDIX No. 54.

NORMAL TEMPERATURE IN DEGREES FAHRENHEIT, JULY.



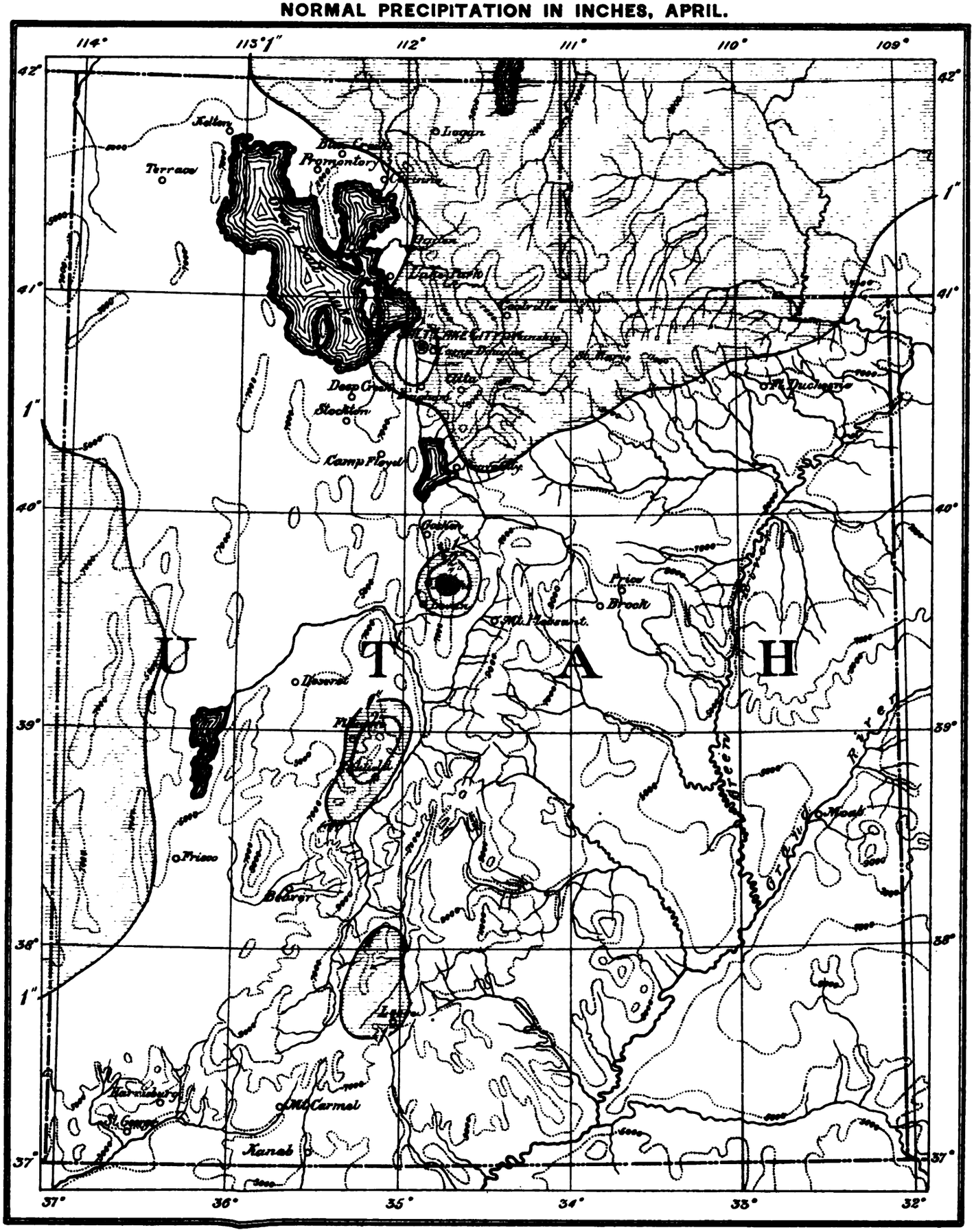
APPENDIX No. 58.

NORMAL PRECIPITATION IN INCHES, ANNUAL.



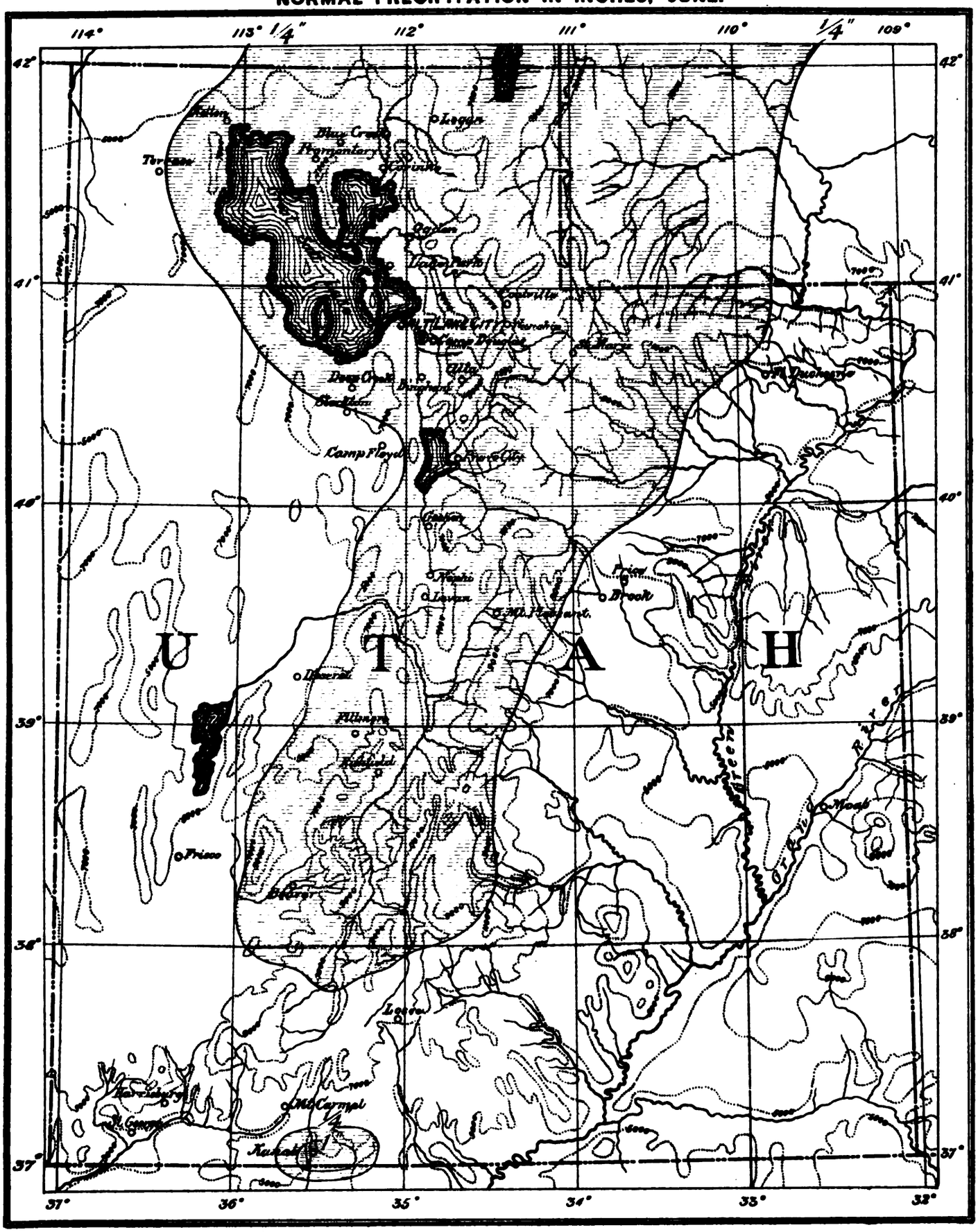
APPENDIX No. 59.

NORMAL PRECIPITATION IN INCHES, APRIL.



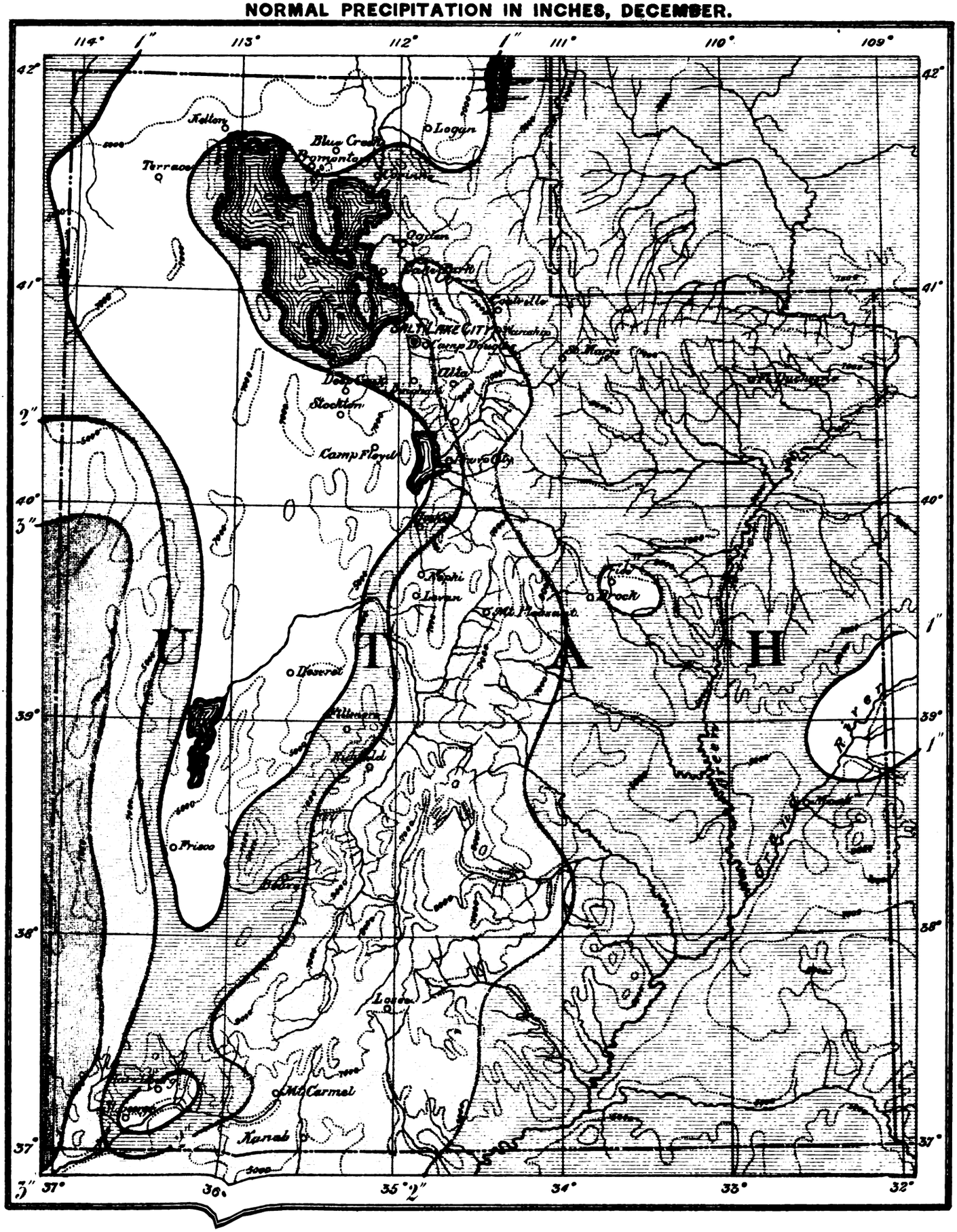
APPENDIX No. 60.

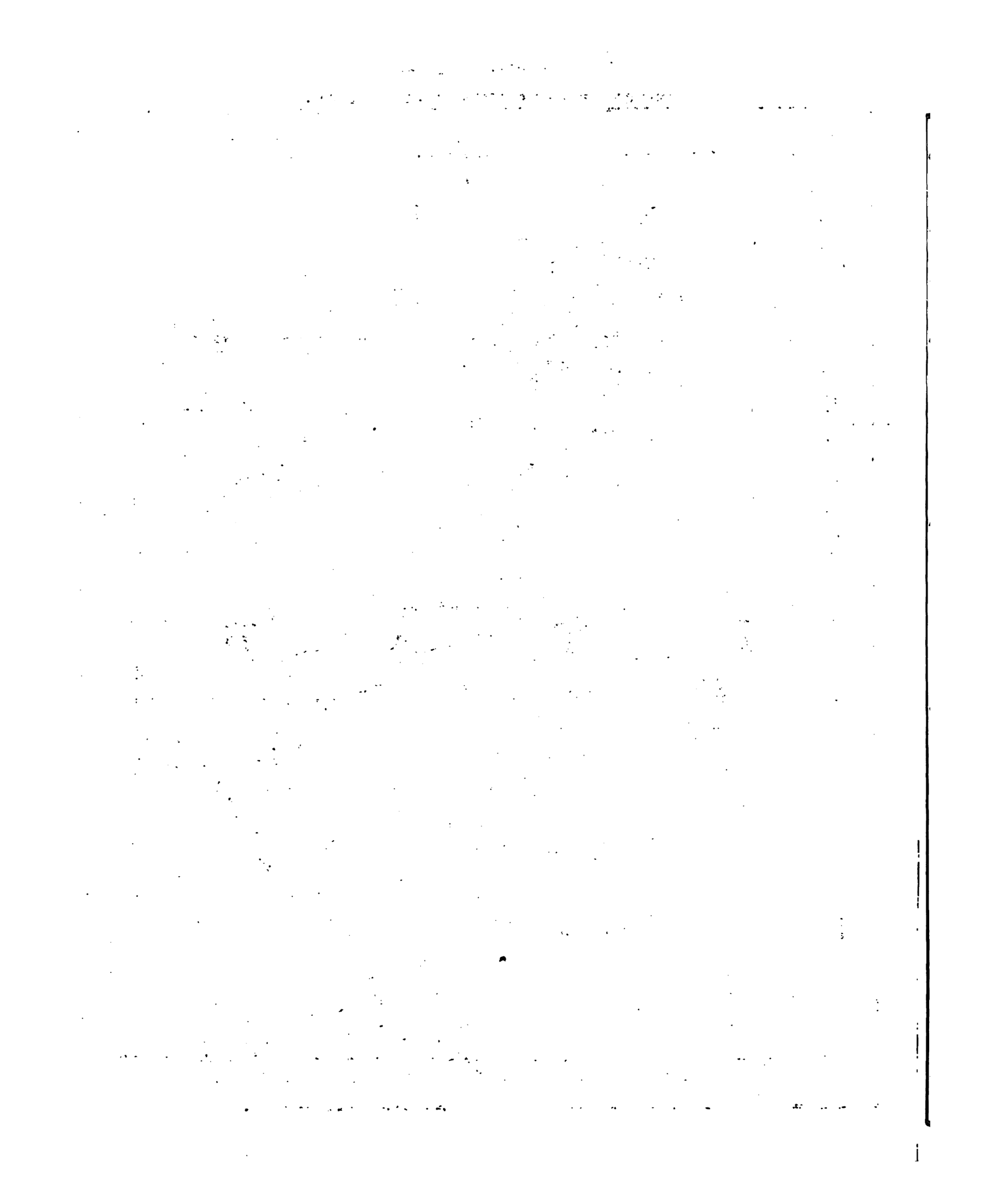
NORMAL PRECIPITATION IN INCHES, JUNE.

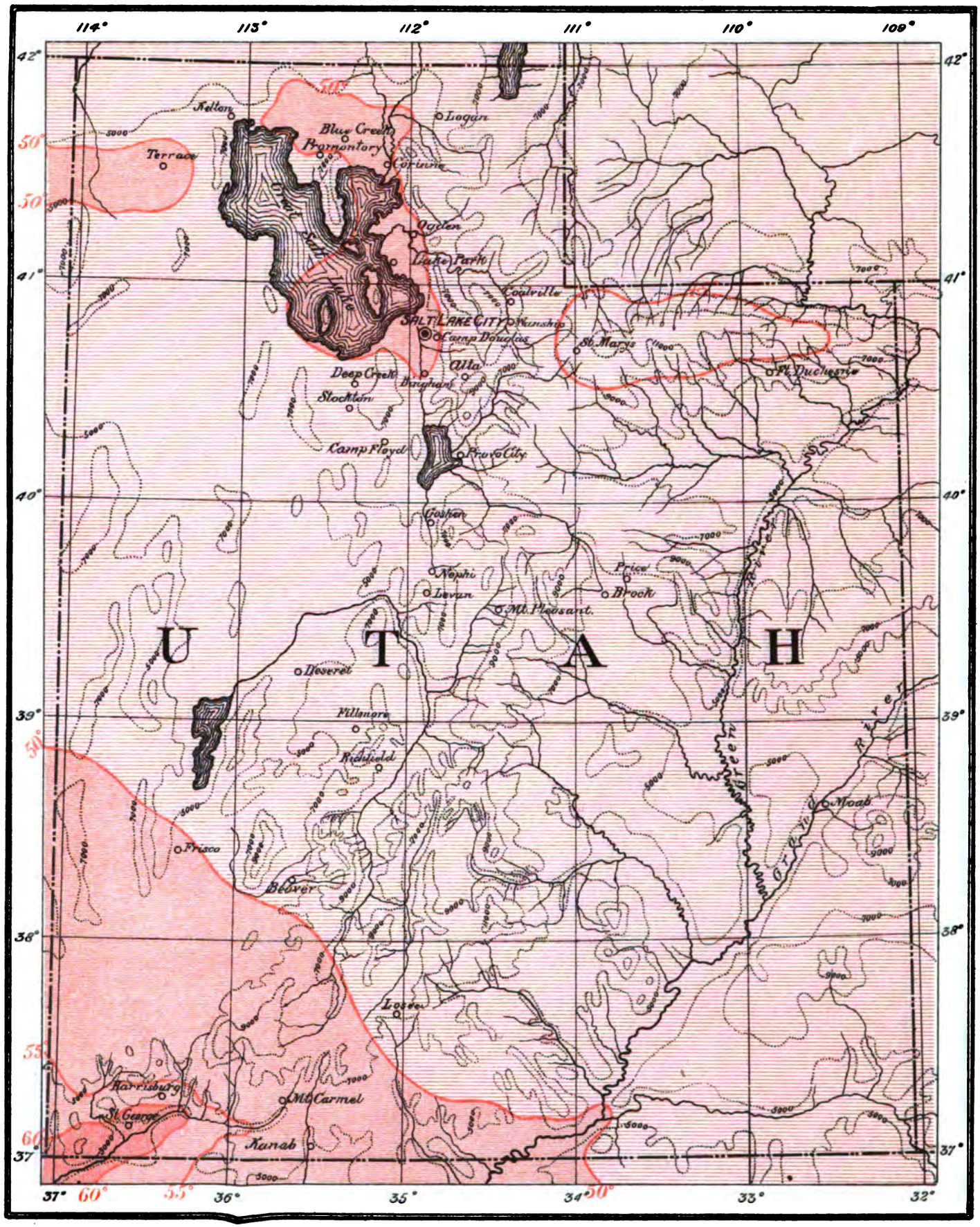


APPENDIX No. 61.

NORMAL PRECIPITATION IN INCHES, DECEMBER.





APPENDIX No. 62.

NORMAL TEMPERATURE IN DEGREES FAHRENHEIT, ANNUAL.